MAY 25, 1953

# STEEL

THE WEEKLY MAGAZINE OF METALWORKING

## Purchasing Methods Have Changed, Too

To help you keep up with the times, see p. 105

PROGRAM FOR MANAGEMENT

No. 4 of a Management Series

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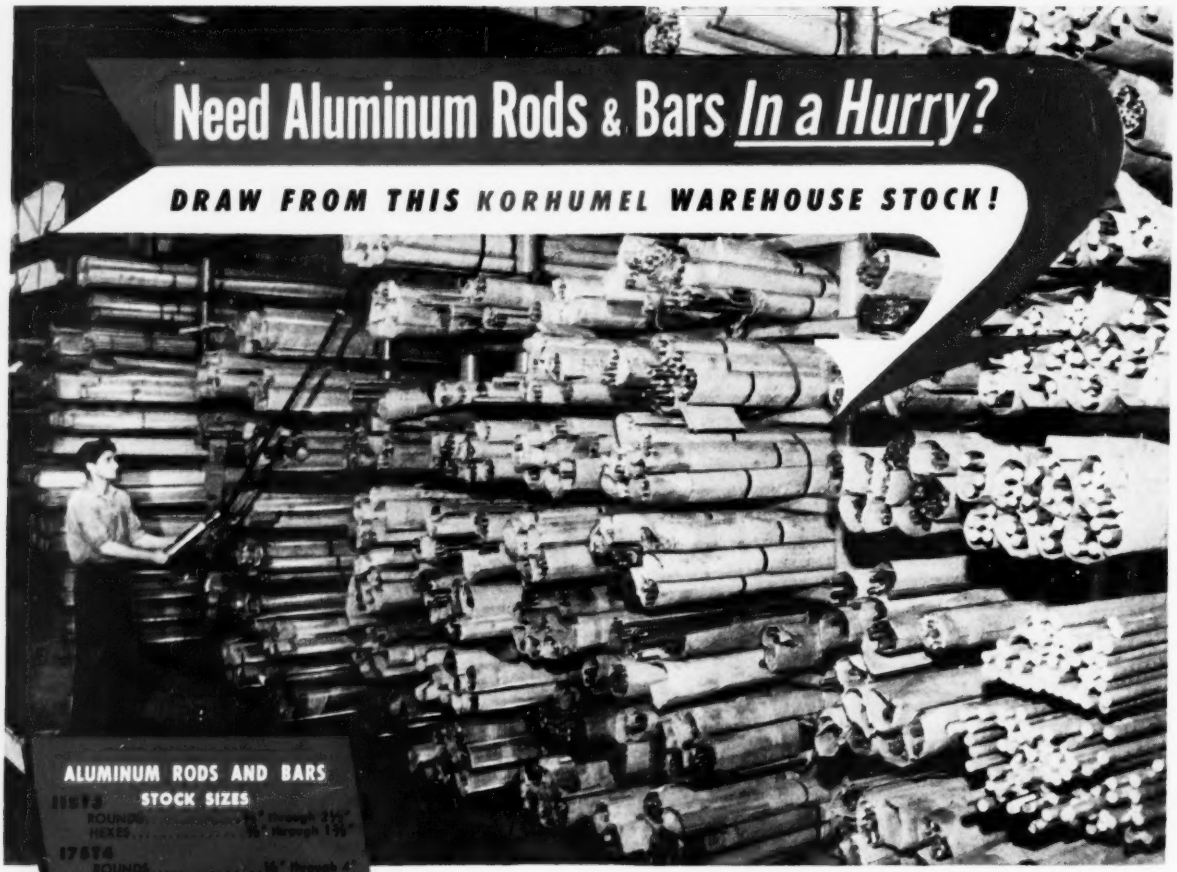
# Need Aluminum Rods & Bars *In a Hurry?*

**DRAW FROM THIS KORHUMEL WAREHOUSE STOCK!**



**ALUMINUM RODS AND BARS**
**STOCK SIZES**

| | |
|---|---|
| 11ST3 | |
| ROUNDS | ⅛" through 2½" |
| HEXES | ½" through 1⅝" |
| 17ST4 | |
| ROUNDS | ½" through 4" |
| HEXES | ½" through 2" |
| 24ST4 | |
| ROUNDS | ⅜" through 3½" |
| HEXES | ½" through 1½" |

**ALSO COMPLETE STOCKS OF ALUMINUM SHEETS AND COILS**

**Complete Shearing and Slitting Services Available for Your Convenience.**

**FREE ALUMINUM STOCK LIST**

Write or call for your copy of this up-to-date Aluminum Stock List. Simplifies specifying and ordering.

# KORHUMEL

## Personalized Warehouse Service ELIMINATES DELAYS . . . SAVES YOU TIME and MONEY!

Why risk delays on important jobs or tie up working capital on large inventories of aluminum rods and bars when you can use the Personalized Warehouse Service of Korhumel for all your aluminum stock needs. You can draw from Korhumel inventories just as easily and quickly as you could from stocks in your own warehouse. Complete selections of sizes, gauges, tempers, alloys and quantities are as near as your telephone. Call your Korhumel Sales Engineer now . . . his name is listed in your classified telephone directory.

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Rigidtex Stainless
Hydraulic Tubing

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Bars

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Coils and Flats

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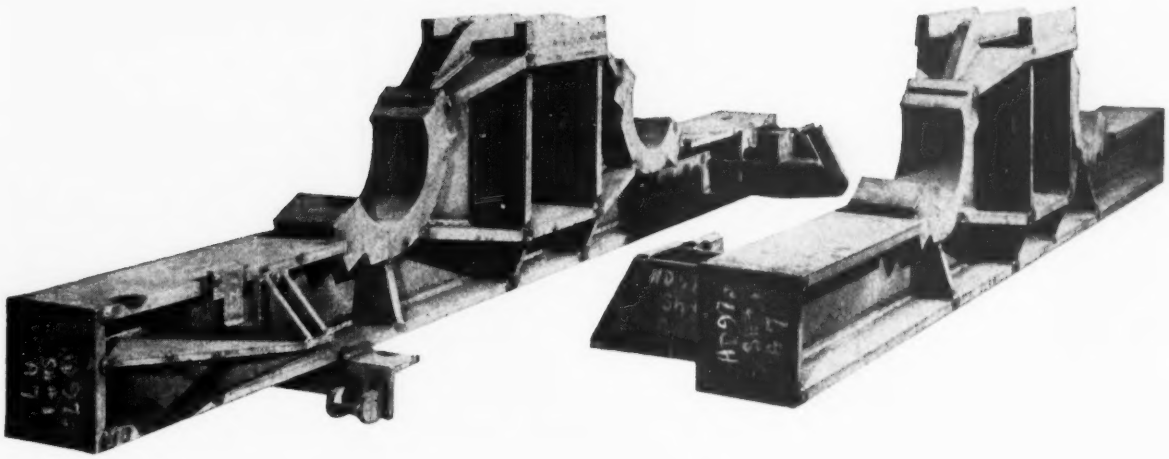


# Side Frames for Ore Car Made by Welding

## WEIGHT: 2624 LB EACH

These complicated parts are side frames for an ore-transfer car. The two side frames, shown from front and rear, are identical. They are 12 ft, 6 in. long; 2 ft, 10 in. high; and 2 ft wide. They were made by welding sections of plate steel, in varying thicknesses, in Bethlehem's Weldments Shop.

If you are a manufacturer of simple or complicated machinery, or machine parts, chances are good that you can profit through these advantages of Bethlehem Weldments:

### 4 BIG ADVANTAGES OF BETHLEHEM WELDMENTS

**1. ECONOMY.** With Bethlehem Weldments, excess weight is eliminated, without sacrificing rigidity. Nine times out of ten, a reduction in weight means a lower manufacturing cost for your product.

**2. VERSATILITY.** Bethlehem Weldments can be made in unlimited sizes and shapes. They can be used either as simple parts, or as sections of assemblies.

**3. FREEDOM OF DESIGN.** These weldments can be made in practically any design, as the steel can be bent, pressed or shaped in advance of welding, without harm to its physical structure.

**4. VARIED USES.** While Bethlehem Weldments are frequently used alone, they can also be combined effectively with forgings or castings.

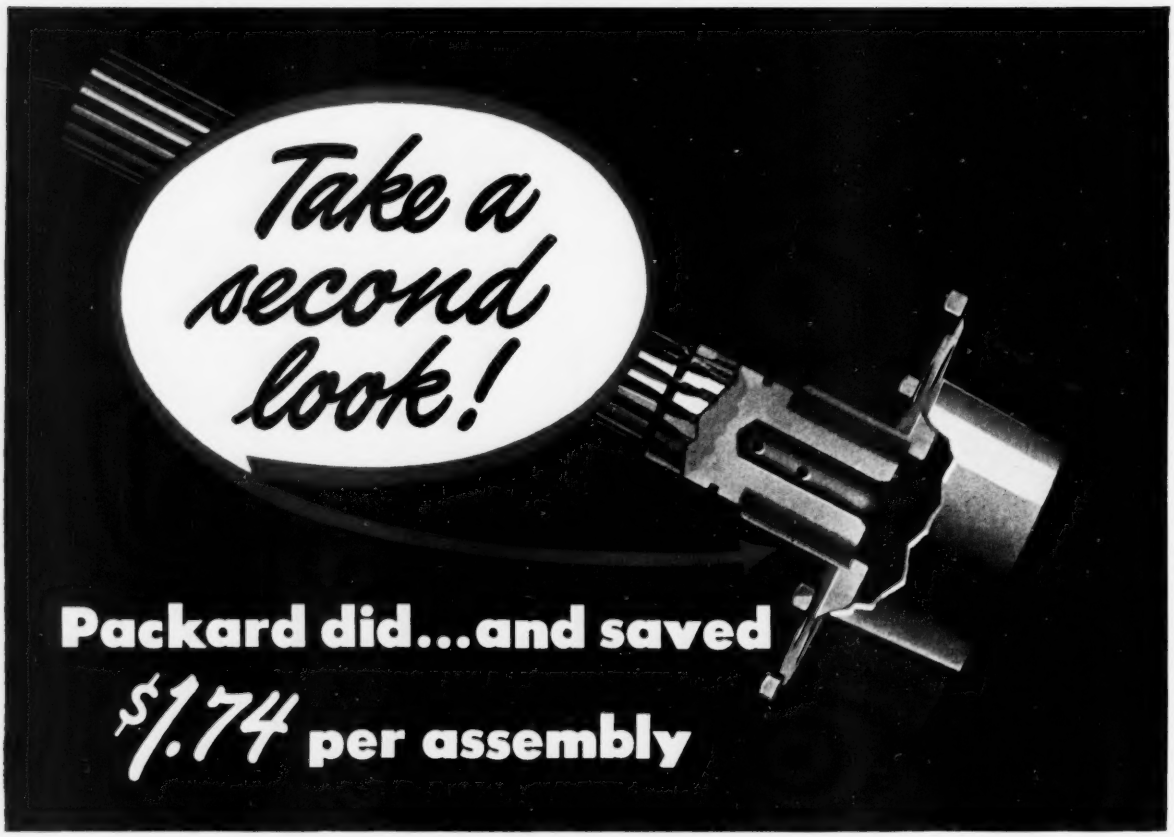
*If you would like to discuss ways in which you can put weldments to profitable use, get in touch with the nearest Bethlehem office.*

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

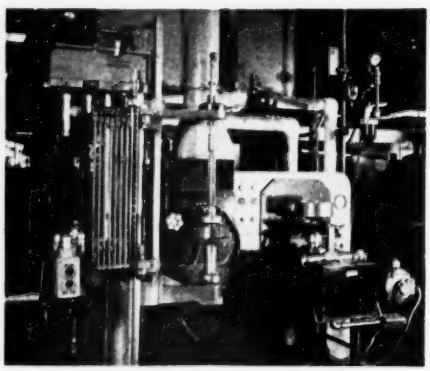
# BETHLEHEM WELDMENTS




# with TOCCO* Induction Brazing

THIS is the "planetary output shaft" for the Packard Ultramatic Transmission. It was originally designed to be made from a forging, but Packard engineers "took a second look" and determined that a slight design change, using a casting and a steel shaft, permitted taking advantage of Induction Brazing. This resulted in a savings of $74,325 in the equipment and tooling for production, in addition to the actual labor and materials savings of $1.74 per assembly.

When designing *your* new product, or redesigning present products for more economical manufacture, you will profit by considering TOCCO Induction Heating for brazing, hardening, soldering, forging or shrink-fitting. Designing for Induction Heating pays off!



A 30 KW, 10,000 Cycle TOCCO Unit Brazes 45 Assemblies per hr.

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Position_____

Company_____

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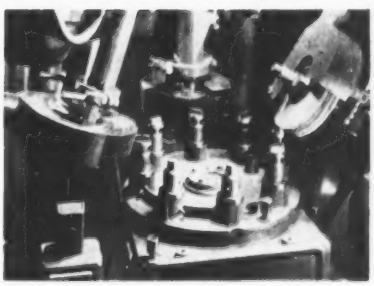
OSBORN

## try this team for lower costs

*Push-button brushing* methods do jobs *better* and many times faster than by hand. For example:

Machine-powered Osborn Brushes are deburring parts 4 to 10 times as fast as hand methods. They are giving similar mass production benefits in cleaning and finishing operations of all kinds. Results are of uniform high quality. Rejects are practically nil.

Whether your product is metal, rubber, plastic or other material, ask to have an **O**sborn **B**rushing **A**nalyst study your operations to suggest improvements with the latest Osborn power brushing techniques. Call or write *The Osborn Manufacturing Company, Dept. G-6, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



*HERE, three different types of Osborn brushes team up to boost deburring output of small parts 300% and to produce smoother, more uniform results.*

Osborn Brushes

**OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES**

Added Evidence that——

# Everyone Can Count on VEEDER-ROOT

Aerial navigators and bombardiers rely on the figures that keep turning up on this Veeder-Root Counter, specially designed for the Armed Forces. And if *you* need to know exactly where you are, with any product or mechanism that's vital to Defense, then you can count on Veeder-Root to help you, to the utmost limits of ability . . . and of available capacity. Write:

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"Counts Everything on Earth"

*This Week in Metalworking*

# STEEL

Vol. 132 No. 21 May 25, 1953

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Eliminate mechanical gear boxes, clutches and variable-pitch cone pulleys..

SAVE MONEY 10 WAYS!

- Boosts output
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GET THESE FACTS!

New 12-page bulletin contains dimension data, drive characteristics, operating features, applications, components, operating principles. Ask for Bulletin D-2102.

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*"Motor-Drive is More Than Power"*

*Naturally* you demand a contractor with . . .

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with plenty of experience in building construction and installation of industrial machinery.

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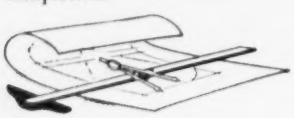
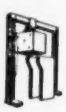
all it takes to assure unquestioned responsibility to see any job through to completion.



**METHODS**
especially developed to meet exacting requirements—tried and proved to be efficient.



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the right kind to complete construction and equipment installation jobs on schedule.

These are MUSTS for the contracting organization you select to undertake your expansion program.

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Enjoy the advantages of . . .
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# behind the scenes

## Meet Tom Hruby . . .

Many of us are at the "Metallic" age with gold in our teeth, silver in our hair, copper in our pockets . . . and lead in our pants. Such is not the case with Tom Hruby, STEEL's newest associate editor. Tom's still young enough to like suits with stripes in them, ties with dots in them and letters with checks in them.

Hruby, as many of you know, is one of the prolific members of our Engineering and Technical staff. He specializes in steel production and steel plant news and feature coverage.

A graduate mining engineer from Michigan Tech, Tom joined STEEL approximately one year ago after having been with the Westinghouse Electric Corporation for 2 years.

This boy's really versatile. He has to be. You see, he's still a bachelor and very eligible. Golf, swimming and squash are pleasure time favorites for Tom. Likes she-ing . . . we mean skiing, too.

A parting-shot contribution to our daffynitions was Tom's very excellent description of a bachelor. "A bachelor", says Hruby, "is a man who never makes the same mistake once."

## Wotta Life

According to Newman Ladabouche, STEEL Market Research Manager, if you live to be 70, you will have spent one year on the telephone, about 20 years sleeping, 2 months signing paychecks for 20 solid years of work done, 5 years shaving and dressing, 5 months tying shoes, 2½ years smoking, 7 years in sports participation and 3 years just waiting for something or someone.

Also . . . you will have spent approximately 2½ months keeping tabs on the metalworking industry through reading your weekly copies of STEEL.

## A New Switch

A dash of science and a shot of fatherly ingenuity is keeping one small boy, a night-time traveler, home and safely in bed.

A. A. Hunnewinkle, one of the large family of STEEL readers, reports using a Minneapolis-Honeywell micro switch to warn the child's parents when their sleepwalking son sets off on one of his nocturnal adventures.

Hunnewinkle tells us that the micro switch is attached to the child's bed and connected with a buzzer in the parent's room.

When the boy's weight is removed from his bed, the switch closes, the parents are awakened, and almost immediately, they can be by his side.

That's a new switch!

## On Psychological Testing

Industry's growing interest in the psychological testing of prospective employees puts us in mind of a story sent to us recently by Bob Fitzsimmons of the McGinnis Steel Company.

A little girl was being tested for social adaptability. When the psychologist asked "Are you a boy or a girl?" she promptly answered, "A boy."

"Oh, you are? . And what are you going to be when you grow up?"

"A father."

"Now, dear," reproached her flustered mother, "you know that isn't true. Why are you saying such things to the doctor?"

"Well," said the bored tot, "if he's going to ask silly questions, I'm going to give silly answers."

## More Daffynitions

Our recent printing of Shrdlu's Glossary has stimulated many BTS readers to contribute to our growing collection of expressive daffynitions. Here are some of the more recent additions:

EXECUTIVE—One who can hand back a letter to a beautiful, redheaded secretary for a third retyping.

CENSOR—Fellow who puts his no's into other people's business.

REPARTEE—Glib and take.

ADULT—A person who has stopped growing at both ends and starts growing in the middle.

Keep the daffynitions coming.

Shrdlu

(Metalworking Outlook—Page 57)

# SHARON STEEL

## Ten-year road test proof of '430' Stainless dependability

● Here's a shining example of what you can expect when you use Sharon "430" Stainless Steel in your product. This section of automotive moulding has been subjected to the grime and acids of the highway in all kinds of weather for more than 10 years. Yet, when a damp cloth, soap and elbow grease were applied, it immediately regained its original luster.

Proof of this kind is the reason why today many hundreds of thousands of cars on the highway are trimmed with "430" Stainless. Sharon "430" has been used for this type of product for over 15 years.

Sharon "430" Stainless is in good supply. It has been used with great success in hundreds of tough applications.

SHARONSTEEL

Get the whole story—ask your Sharon representative or write today for fully explanatory "430" Stainless brochure.

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**SHARON STEEL CORPORATION** *Sharon, Pennsylvania*

For information on Titanium contact Mallory-Sharon Titanium Corp., Niles, Ohio

# World's First ARMORED CAR

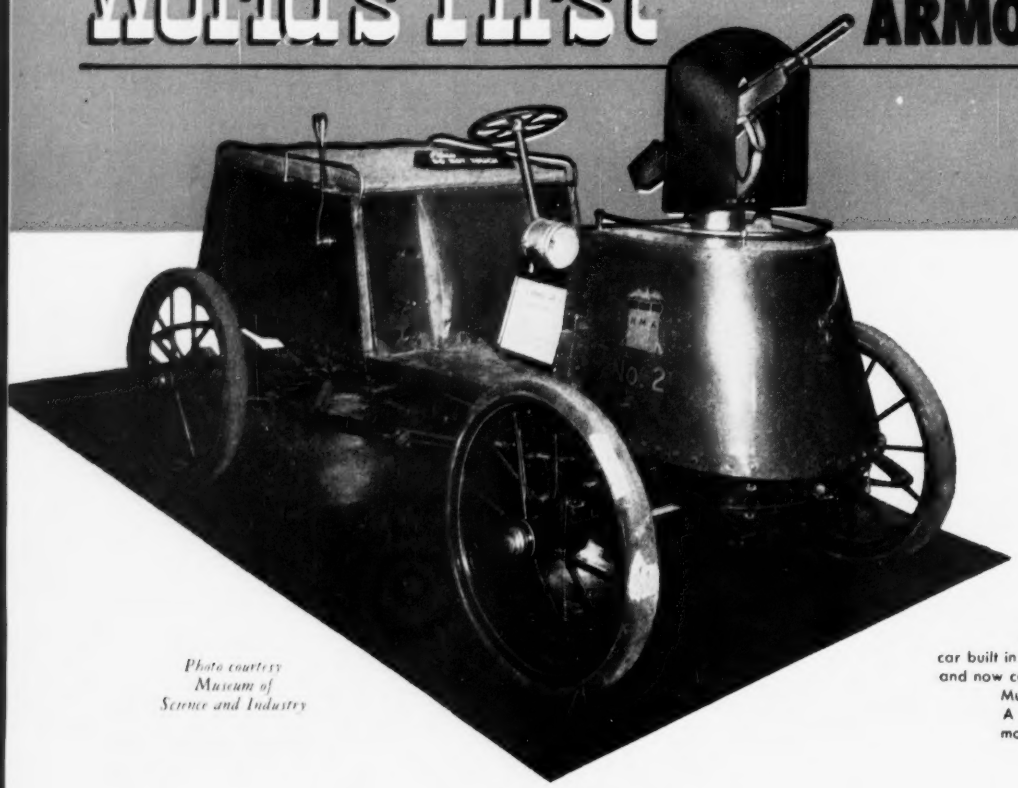


*Photo courtesy Museum of Science and Industry*

Mechanized warfare got its start with this steam-powered car built in 1898 by Col. Royal Davidson and now carefully sheltered in Chicago's Museum of Science and Industry. A Colt automatic machine gun is mounted behind an armor shield in front of the driver.

. . . AND STANDARD STEEL SPRING COMPANY—

## *America's Largest Producer of*

# ARMOR PLATE for ORDNANCE

We were not around when Colonel Davidson built the first armored vehicle. But America's prime producers have relied on Standard Steel Spring Company armor plate programs during many National emergencies. Now our talents are devoted to the rearmament program.

Here is what we are doing. We have mobilized a great group of fully staffed and equipped plants to make essential armor plate for tanks. We engineer the parts, tool for their most economical production, work with prime contractors in closest contact on procurement, production, inspection.

We are geared to handle every armor plate requirement—whether it be for large or small parts in flat, blanked or formed shapes, fully machined or even subassembled. Our facilities are complete, our production schedules flexible. So when you think of armor plate think first of Standard Steel Spring Company—America's largest producer. Your inquiries are invited. Write, wire or phone us today.

**Standard Steel Spring Company**

# TO World's Finest TANKS

ARMOR PLATE DIVISION • PENOBSCOT BLDG. • DETROIT, MICHIGAN

The above macrograph offers visual proof of the uniform grain flow characteristics in a carriage bolt made from Keystone "Special Processed" Cold Heading Wire. The continuous, strength-giving flow lines are a sure sign of efficient cold heading which results in longer die life, increased production and a better finished product.

The following analysis of "special processed" wire is recommended for difficult cold heading:

C1006 - C1012 for Clutch Heads
C1006 - C1022 for Phillips Heads
C1006 - C1022 for Struck Slot Heads
C1108 - C1109 for Phillips Head Wood Screws
C1035 - C1038 for Heat Treated Screws and Bolts

Keystone is prepared to help solve any of your industrial wire problems. Your inquiry is welcomed.

INDUSTRIAL WIRE SPECIALISTS

**Keystone Steel & Wire Company**
**PEORIA 7, ILLINOIS**

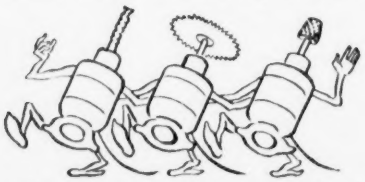
# LETTERS
## TO THE EDITORS

### New Subscriber, Old Reader

As a new subscriber, but an old reader of STEEL for over 25 years, I have read from cover to cover of this good magazine and will continue to do so as long as I am in my present line of work. STEEL helped me back 25 years ago and I know it will help me today.

J. E. Kosh
Castle Street
Knoxville, Tenn.

### Small Tools a Growing Market



You certainly did a grand job of giving a concise picture of the small power tool industry in your story "Power Tools for Home Use Gain Sales" (Apr. 27, p. 63).

G. R. French
Black & Decker Mfg. Co.
Towson, Md.

### A Vote for "Mirrors"

Page 81, Apr. 20, STEEL, "Mirrors of Motordom" is so well written, terse and I go along with you on all of the discussion made that I must tell that it is excellent. My librarian picks out this page for me from each issue of STEEL and it is one, from my point of view, that we take the magazine for.

Keep up the good work.

F. M. Young
president
Young Radiator Co.
Racine, Wis.

### Hydraulic Unit Available

In "Mirrors of Motordom" (Apr. 20, p. 81) you mention the Monroe Auto Equipment Co. having a hydraulic power steering mechanism that replaces the drag link in conventional steering systems, and that the unit is adaptable on conventional existing cars, as an accessory.

Where can we get further information on the unit?

L. P. Krueger
vice president
K. I. Willis Corp.
Moline, Ill.

• *Write to Donald Wolfe, Monroe Auto Equipment Co., Monroe, Mich.—ED.*

### Navy Takes to Handbook

Recently I had an opportunity to review a copy of your publication, STEEL's

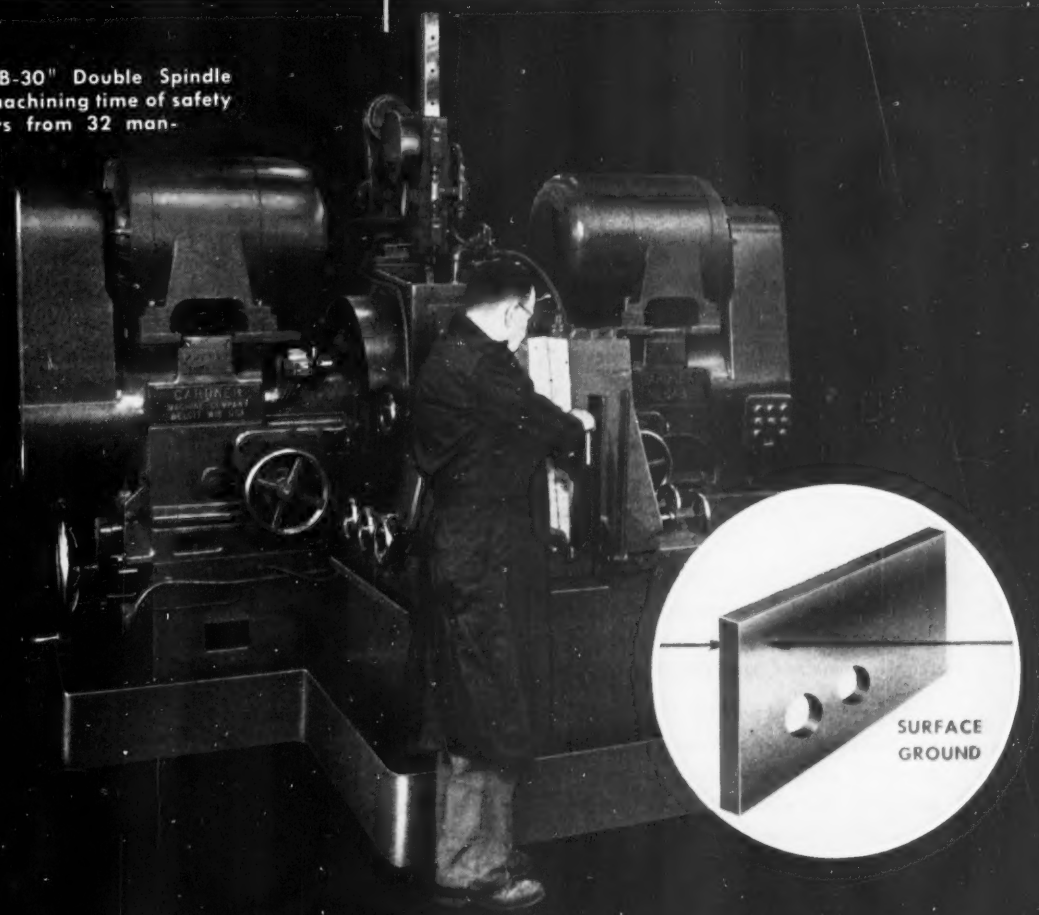
*Please turn to page 12*

# GARDNER GRINDING
## Replaces Combined Milling-Surface Grinding

# CUTS COST 75%!

**TWO** Surfaces Ground in **ONE** Operation

This Gardner 84B-30" Double Spindle Grinder reduced machining time of safety deposit box doors from 32 man-hours to 8 man-hours for daily production requirements.




117M

**JOB DATA**

**MACHINE:** Gardner 84B-30" Double Spindle Grinder.

**PRODUCTION AVERAGE:** 4 to 6 pieces per minute per cut for doors up to 6" x 10"; maximum work size, 12" x 12".

**TOLERANCE:** .001" to .002" for parallelism. .005" for uniformity.

For help with your flat surfacing problems, send us your blueprints for production estimates and tooling suggestions.

**GARDNER MACHINE COMPANY**
420 Gardner St., Beloit, Wisconsin, U.S.A.

# GARDNER
*precision disc* **Grinders**

# When Jobs Reach PROCESS ENGINEERING . . . Call FEDERAL for GAGE ENGINEERING

**Complete Set of Gages . . .**
**Engineered by FEDERAL for Inspecting the Working Parts of an Automobile Sub-Assembly**

Photo shows Gages for use at production and at final inspection. All these Gages were engineered directly from customer's Process Sheets and were designed from the sample parts shown and from blueprints. Each Gage checks a different dimension and is shown with its *single* master (not *two*).

WHEN YOU *START* TO PROCESS YOUR JOBS, that's the time to take advantage of our years of experience in designing every sort of dimensional visual gage. Our engineers know how to set up your gaging requirements and save you time and money.

At Federal we know the basic difference between designing and building precision gages and designing other mechanical products. Designing precision gages requires knowledge of how to *magnify* and *transfer* measurement variations *precisely*, without *loss* of motion — with a minimum of *friction* and *inertia* in the working parts — and a hundred other details which do not concern the usual tool and machine designer.

No matter whether it's an Air or Automatic Gage or a Dial Indicator type, there is every reason you should get better gages if Federal designs and builds them. Call in Federal when you *start* processing a job and let us engineer your gages for you. Federal Products Corp., 1215 Eddy Street, Providence 1, Rhode Island.

FEDERAL

Largest manufacturer devoted exclusively to designing and manufacturing *all types* of DIMENSIONAL INDICATING GAGES


# LETTERS

*Concluded from page 10*

Specifications Handbook. The three copies of the handbook, covered by our three subscriptions, have been assigned to appropriate areas in design and drafting and procurement. This leaves no copy for the Technical Shops Division of the laboratory which is daily concerned with metal specifications in locating material from commercial sources. These sources are not consistent in the specification types they list. Because of this, cross referencing information is of vital importance. Your handbook is an execellent means of providing this cross-referencing and I would appreciate any information you could offer as to how a copy may be obtained.

N. P. Sarelas, co-chief
Technical Shops Division
U. S. Naval Ordnance Laboratory
Silver Spring, Md.

• *Subscribers can buy additional copies of the Specifications Handbook at $2.00 per copy.—ED.*

## Specs Handbook on Land

I can assure you that STEEL is one of my "musts" for reading and I expect that your Specifications Handbook will be another one.

J. G. Allen
Bingham-Herbrand Corp.
Fremont, O.

## Drawn to Magnetic Material

In your "Production & Engineering News at a Glance" item entitled "Magnetic Material" (Mar. 23, p. 75), you mention "a magnetic material developed by the Naval Ordnance Laboratory." Where can I get more information on this subject?

E. Spire
3877 Draper Ave.
Montreal, Que.

• *Write the Office of Public Information, U. S. Naval Ordnance Laboratory, Silver Spring, Md. We suggest you refer to the magnetic material by its designation, 16-Alsenol, and mention that you saw the brief description in STEEL.—ED.*

Please send us two sets of tear sheets of your article "Permanent Magnets Attract More Industry Attention" by Ernest E. George, Carboloy Department, General Electric Co., Detroit (Apr. 20, p. 110).

J. R. Montague
Behr-Manning Corp.
Troy, N. Y.

• *Sent.—ED.*

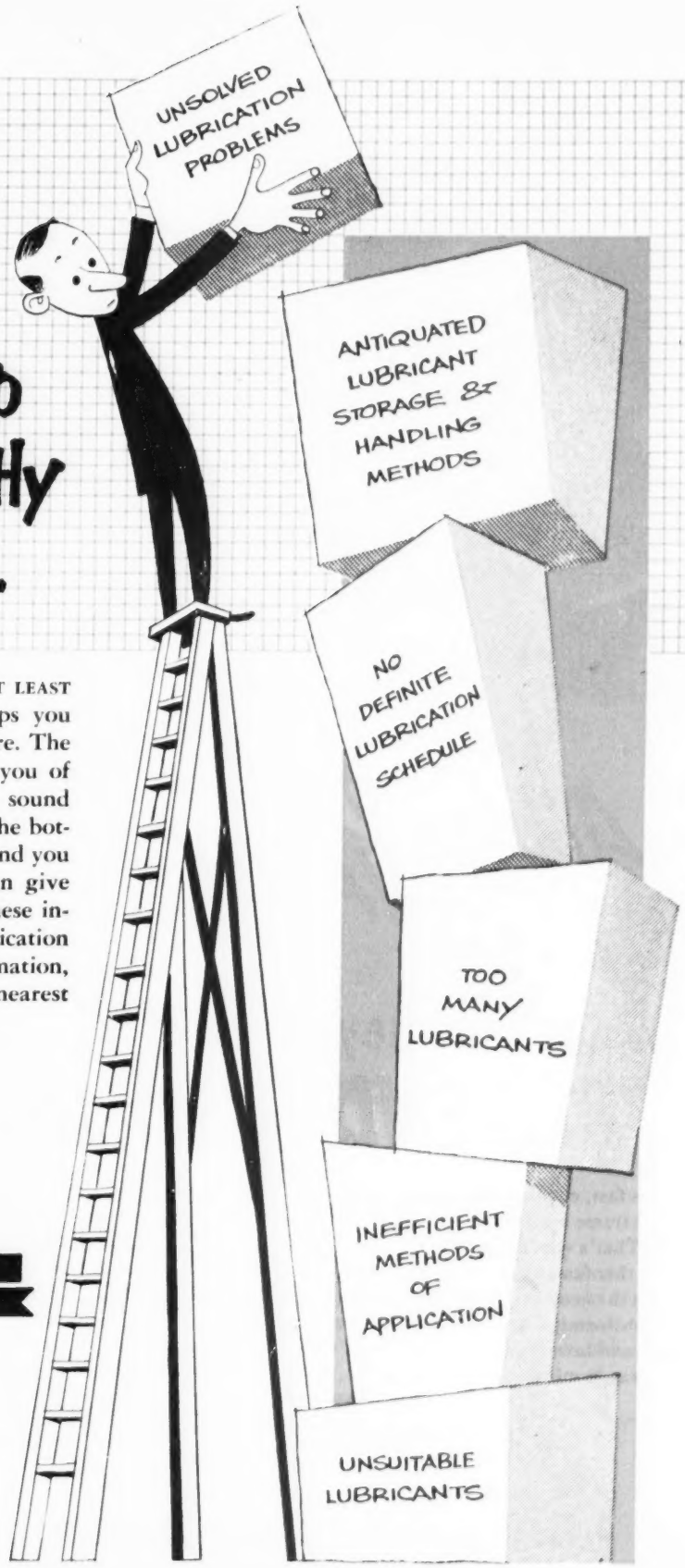
## Liquid Blanket for Molten Zinc

We are very much interested in your "Progress in Steelmaking" article "Liquid Blanket Reduces Oxidation of Molten Zinc" (Apr. 13, p. 136). May we have the mailing address of the author, A. A. Paterson of Dewey & Almy Chemical Co., Chicago?

L. Scritchfield
Boyles Galvanizing Co.
Tulsa, Okla.

• *Mr. Paterson's address is: A. A. Paterson, Dewey & Almy Chemical Co., 6050 West 51st St., Chicago 38.—ED.*

# Building up to a costly letdown...




OF COURSE YOU'RE NOT—OR AT LEAST NOT CONSCIOUSLY. But perhaps you are missing a bet here and there. The sketch is intended to remind you of the importance of building a sound lubrication structure — from the bottom up. We'd also like to remind you that a Gulf Sales Engineer can give you practical help on any of these individual phases of the lubrication problem. For additional information, write, wire, or phone your nearest Gulf office.

**GULF OIL CORPORATION**
**GULF REFINING COMPANY**
**Pittsburgh 30, Pennsylvania**

GULF SERVES INDUSTRY

# All Hands are "TOP HANDS"

## ...when they work with SIMONDS "RED END" Hacksaw Blades

It's fast, easy cutting on any material . . . when the hand-frame holds the right "Red End" Blade for the job. That's why those who know, insist on the blade with this famous trade-mark.

On the economy side, Simonds "Red End" Blades are uniformly hardened for better cutting performance and lowest cutting costs. What's more, teeth are accurately milled and precision-set . . . for straighter cutting and longer life. And Simonds offers a choice of three types of blades — Standard, Molybdenum or High Speed Steel — Hard Edge or All Hard — to provide a "right" blade for your job.

Get delivery from stock from your Simonds Distributor.

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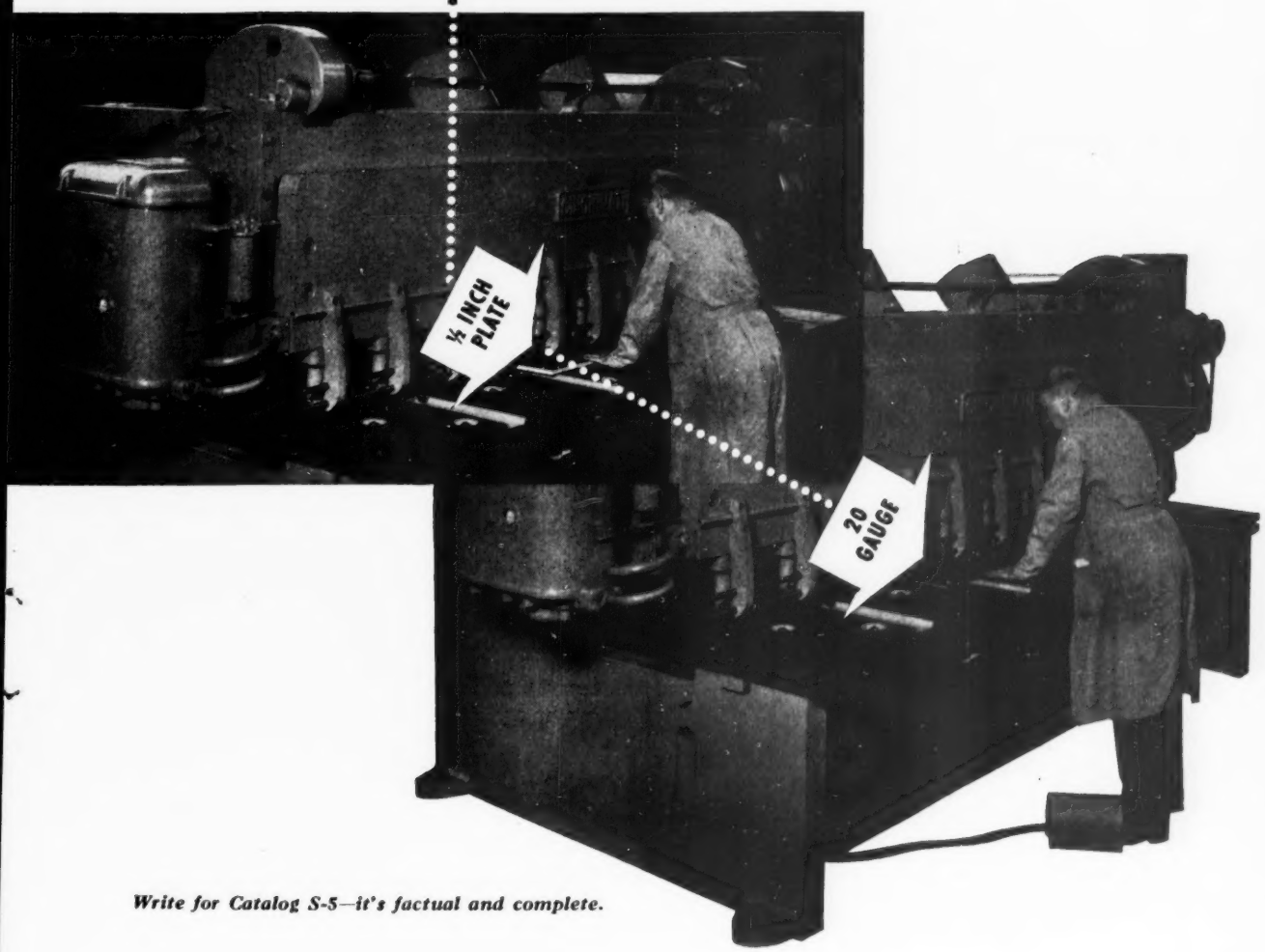
**SHEAR ½" PLATE OR 20 GAUGE SHEETS**

# without changing knife clearance

**ON A CINCINNATI . . .**




***Write for Catalog S-5—it's factual and complete.***

. . . You do not change knife clearance for successful shearing of different thicknesses on a Cincinnati. Just set the clearance for the thinnest material and shear all thicknesses up to capacity. Thousands of Cincinnati Shears are used continuously in this manner. This practical method prevents accidental damage—saves time. Remember, changing knife clearance interrupts production. Investigate the Cincinnati All-Steel Shear and its accurate, time-saving features.

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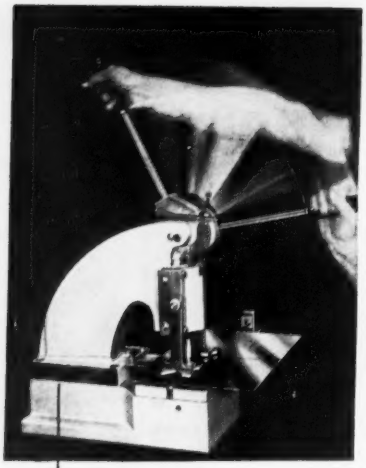

**PUNCH...**
**BLANK...**
**EMBOSS...**
**FORM...**

**Quickly, Easily, Accurately with a DI-ACRO* PUNCH PRESS**

Deep throats—6 and 12 inches—of Di-Acro Punch Presses make them ideal for many operations impossible to perform on most bench presses.

Holes of various shapes and sizes—as large as 4" in diameter in 16 gauge steel—can be punched. Vee shaped ram controls position of punch head assuring perfect alignment. Turret stripper, of exclusive Di-Acro design, strips material from punches of all shapes. Side and back gauges provide exact work positioning.

*pronounced Die-ack-ro

**FOUR HAND AND POWER MODELS AVAILABLE**

Di-Acro Power Punch Presses are designed for high speed production. Rated capacity, five tons. 180 strokes per minute. Motor driven flywheel and other moving parts are housed in a welded, steel cabinet.

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Complete line of standard size punches in round, square, notcher, rectangular and oval shapes available in six clearances. Also special sizes.

***Send for 32-Page Catalog***

Tells all about both hand and power operated Di-Acro Punch Presses, Benders, Brakes, Notchers, Rod Parters, Rollers and Shears. Punch and Die Cost Sheet included.

*Creators of "Die-Less Duplicating"*

**O'NEIL-IRWIN MFG. CO.**
304 8th Avenue
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di-acro PRECISION METALWORKING MACHINES



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# New facts for your file on U·S·S STAINLESS STEEL

## Change to Type 430 wins complete acceptance, adds no cost for Star Manufacturing Company

Type 430 Stainless Steel was used in fabrication of this complete package hot dog unit by Star Manufacturing Company, St. Louis, Mo.

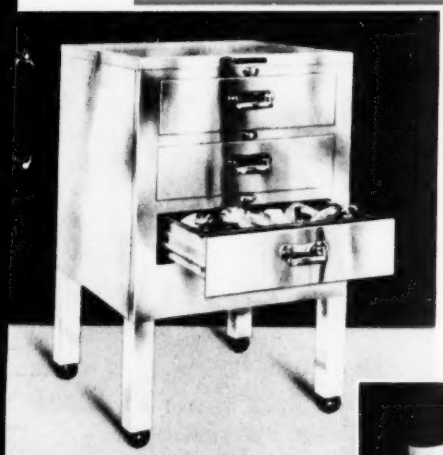
● Star Manufacturing Company, St. Louis, Mo.—a division of Hercules Steel Products Company—is completely satisfied with its change to Type 430 Stainless Steel in fabrication of the food handling equipment it manufactures.

In fact, Vice President Alfred Dangler, Jr., says, "If and when nickel-bearing grades become more plentiful, we will weigh very carefully the return to such a grade and in all probability will continue to use Type 430 in very substantial quantities."

Only a few changes were made in manufacturing processes in the switch to Type 430. These changes required no expense in tooling nor did they increase the total cost of the various parts.

Mr. Dangler adds, "We have found that Type 430 Stainless Steel is being accepted without reservation by those using our equipment."

## Toastmaster roll and food warmers now fabricated from Type 430 Stainless Steel

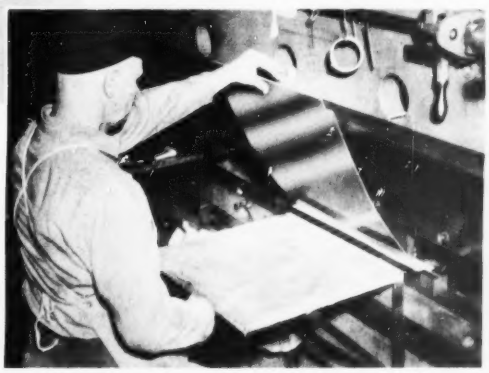


▲ Three-drawer Toastmaster roll and food warmer is mostly Type 430 Stainless Steel.

● McGraw Electric Company, Elgin, Ill.—manufacturer of the famous Toastmaster line of electrical appliances—is now using Type 430 Stainless Steel in its roll and food warmers for restaurant use.

The tops of these warmers are 18-gage sheets and the sides and drawer fronts are 24 gage. Drawer parts that touch the food are made from Stainless Steel, too.

Shop foreman E. Christensen says he has found little difference in working Type 430 Stainless compared with nickel-bearing grades formerly used. Fabricating operations involved include shearing, punching, forming, blanking and spot welding.



Forming 18-gage sheet of Type 430 into top for Toastmaster roll and food warmer at the Elgin, Ill. plant of McGraw Electric Company. ▶

### Get the complete story on U·S·S 17 (Type 430) Stainless Steel

**Our representatives will be glad to assist you in applying U·S·S 17 (Type 430) Stainless Steel to your product with careful attention to your fabricating operations and the product's end use.**

**You'll also find valuable assistance in our booklet, "Fabrication of U·S·S Stainless and Heat-Resisting Steels." For your copy, write to United States Steel Corporation, Room 2811-U, 525 William Penn Place, Pittsburgh 30, Pa.**

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USS

**UNITED STATES STEEL**

# New facts for your file on U·S·S

## Made of U·S·S MAN-TEN steel, vital parts of land leveler and ditching plow weigh less but wear longer

### Switch to U·S·S MAN-TEN steel solves serious forming problem, increases rigidity, saves weight

Lyon Metal Products, Inc., Aurora, Illinois, originally specified 20-gage carbon steel for the seats of these steel folding chairs. In press forming, the seat section showed a tendency to crease across the bracing angle. Although the crease was scarcely noticeable to the touch, it became very obvious under certain light reflections and created sales resistance.

To overcome this, Lyon switched to cold-rolled U·S·S MAN-TEN steel in 22-gage weight. This strong, tough steel gave greater rigidity to the seats and completely eliminated the creasing or buckling. Although weight saving was not a factor in the selection of U·S·S MAN-TEN, the change resulted in a weight reduction per seat blank of three-quarters of a pound, which appreciably cuts the steel tonnage required, keeps manufacturing costs down, lowers shipping costs.

●The Eversman Manufacturing Company, Denver, Colo., have used U·S·S MAN-TEN and other U·S·S High Strength Steels in their famous line of agricultural implements for a good many years. Recently they wrote:

"We had been using $\frac{1}{4}$" mild carbon steel for the curved center-cutting blade of our Model 289 Land Leveler and wanted to reduce its weight. We were able to do this by changing to 10-gage hot-rolled MAN-TEN steel which weighs 44% less. Then we did some checking with our dealers and find that the MAN-TEN steel blade wears 20% longer.

"The Eversman Ditcher is a new product with us. To keep it as light and strong as possible and give it good resistance to wear, we naturally decided on MAN-TEN steel for the curved wings as they perform a function similar to the cutting blade on the Leveler. The MAN-TEN steel gives us a very strong durable section which can take a great deal of punishment without being bent out of shape as happens with ordinary carbon steel."

In hard-working farm equipment like this and in heavy-duty earth moving and materials handling equipment such as cranes, power shovels, drag line excavators, scrapers, bulldozers, trenchers, snow plows, etc., wherever parts are subjected to severe wear and punishing loads and stresses, the high resistance to abrasion, high endurance limit and superior yield point values of U·S·S MAN-TEN steel can be utilized at little or no increase in cost to reduce weight, increase capacity and prolong life. It will pay you to examine the possibilities of this service-tested steel.

### Manufacturer of heavy-duty trailers uses MAN-TEN steel for maximum strength with minimum weight

If you are building equipment that requires strength, toughness and stamina beyond the ordinary, this letter from the Talbert Construction Equipment Co. of Summit, Ill., should be of interest.

They write, "One of the principal problems confronting us as manufacturers of heavy-duty hauling equipment is the control of design so as to insure adequate strength at critical points with minimum weight. The extremely heavy loads our trailers are designed to handle—up to 100 tons—called for the use of very heavy structural sections in carbon steel or the adoption of a steel that would give us the high strength needed without increasing the dead weight. We found the answer in U·S·S MAN-TEN steel, and our main beams, center sill and side channels are built of this grade of high strength steel, with excellent results.

"In welding MAN-TEN steel to mild steel, good results are obtained using a mild steel welding rod. In welding MAN-TEN to MAN-TEN, best results are secured using a High-Strength welding rod."

**U·S·S HIGH STRENGTH STEELS**

**U·S·S COR-TEN • U·S·S MAN-TEN • U·S·S TRI-TEN**

# HIGH STRENGTH STEELS

1933 USS HIGH STRENGTH STEELS UNITED STATES STEEL 1953

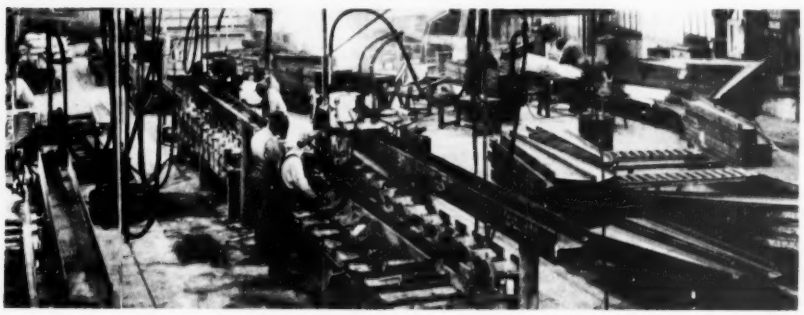
TWENTY YEARS OF PERFORMANCE

## Roof purlins of U·S·S MAN-TEN steel weigh no more than carbon steel, carry 72% more live load, cost 22% less to use

● Butler Manufacturing Co., Kansas City, Mo., a leading producer of pre-engineered buildings, illustrates perfectly how U·S·S MAN-TEN steel often provides more effective strength per dollar, and is therefore more economical than any other material.

Says Mr. W. B. Larkin: "At present we are making generous use of U·S·S MAN-TEN steel for roof purlins and side wall girts on our standard rigid frame buildings. By a rolling and press brake operation, MAN-TEN steel strips are formed into Z-sections approximately 6½" high with flange 2½" wide.

"Originally we made these members of 14-gage carbon steel which, when properly spaced, carried a roof load of 15 lbs. per sq. ft. The expansion in our business required that we furnish a building for heavier roof loads. We were limited by our fabrication equipment which is very expensive, so it was decided to use high tensile material of the same thickness to carry this heavier roof load. The use of U·S·S MAN-TEN steel in the same gage gave us the necessary increase in load-bearing capacity, as follows: 14-gage carbon steel purlins, weighing 62 lbs., supported a load of 15 lbs. per sq. ft.



"In contrast, 14-gage U·S·S MAN-TEN steel purlins, in the same weight, supported a load of 26 lbs. per sq. ft. Result: 72% increase in load-bearing capacity with a 22% decrease in cost ratio per pound of live load capacity.

"You can see from this that even though the base price of U·S·S MAN-TEN is higher than carbon steel, when compared with the job it does . . . is less expensive than regular steel. We are now considering the use of MAN-TEN steel for the fabrication of complete rigid frames for larger buildings."

| MECHANICAL PROPERTIES OF U·S·S MAN-TEN STEEL | | THICKNESSES | |
|---|---|---|---|
| | ½ Inch and Under | Over ½ to 1½ Inch Incl. | Over 1½ to 3 Inches Incl. |
| Yield Point, min., psi | 50,000 | 45,000 | 40,000 |
| Tensile Strength, min., psi | 75,000 | 70,000 | 65,000 |
| Elong. in 2 In., min., per cent | 20 | — | 22 |
| Elong. in 8 In., min., per cent .180 In. and heavier | 18 | 19 | 20 |
| Cold Bend | 180° D = 1t | 180° D = 2t | 180° D = 3t |

The minimum yield point and tensile strength requirements will be reduced by 5,000 psi when the material is specified in the annealed or normalized conditions. ASTM Standard Specimens, minimum number of tests and ductility modifications apply.

**ADDITIONAL TYPICAL PROPERTIES FOR ENGINEERING GUIDANCE**

| | |
|---|---|
| Resistance to atmospheric corrosion | 2 times carbon steel |
| Compressive Yield Point, psi | Equal to tensile Yield Point |
| Shearing Strength, psi | Equal to ¾ Tensile Strength |
| Modulus of Elasticity, psi | 28,000,000 to 30,000,000 |
| Endurance Limit (as rolled, avg.), psi | 39,000 |
| Charpy Impact, keyhole notch (as rolled, room temp. avg.), ft. lb. | 30 |
| Coefficient of Expansion per degree F, 70° to 200° F | .0000063 |

*Send for the* ***MAN-TEN*** *Book, get complete information*

United States Steel Corporation
525 William Penn Place, Room 2811-U
Pittsburgh 30, Pennsylvania

Please send me a copy of your book "U·S·S MAN-TEN."

Name Title

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UNITED STATES STEEL

# "I've got 90 years'

*says Ernie Stevens,*
**U·S·STEEL HEATER**

As a Heater at our Homestead Forgings Division, Ernie operates the 49-foot car-bottom furnace that heats the ingot up to forging temperature.

He has worked at Homestead for 40 years, and his father was a Heater, too—for over 50 years. When Ernie was 18, he knew more about heating steel than most men, just from talking to his father. That's why, today, he can draw upon 90 years of experience in the forge shop.

When an ingot comes from the melt shop, Ernie puts it in his furnace and "equalizes" it so the temperature will be the same all the way through. Then he slowly raises the piece to the right forging temperature. These operations require that Ernie use his skill and experience to heat the ingot uniformly to insure successful forging.

But that's not all of the job. Say a Pressman finished forging *one* end of a piece, then sent it back for a re-heat before working the *other* end. Ernie puts the piece in one of his furnaces, then carefully adjusts the gas burners to control the temperature on the finished end, and still heat the unfinished end to the proper forging temperature.

Obviously, there are many heating techniques a Heater must use. Yet, heating is a completely reliable operation at our Homestead Forgings Division because all of our Heaters, like Ernie, have the experience, the equipment, and the firm determination to give you the finest forgings that money can buy.

Why not make use of this experience on your next forging order? For more information on U·S·S Quality Forgings or for our new 32-page booklet describing them, write to United States Steel, 525 William Penn Place, Room 2811-U, Pittsburgh 30, Pa.

USS *Quality* **FORGINGS**

- heavy machinery parts—carbon, alloy, stainless
- electrical and water wheel shafts
- hammer bases and columns
- marine forgings

# experience in heating steel!"

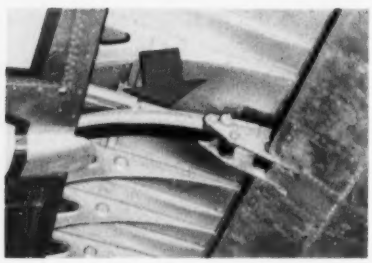
UNITED STATES STEEL

# New facts for your file on U·S·S CARILLOY STEELS

## U·S·S Carilloy steel in rolled sections

## lops 4 hours off machining time, provides stronger flap tracks for Convair airliners and cuts costs 75%

Landing flaps on the Model 340 Convair airliner slide on tracks made of CARILLOY 4140 steel T-sections. These tracks are much stronger than those formerly made from rectangular bars. And they cost 75% less!



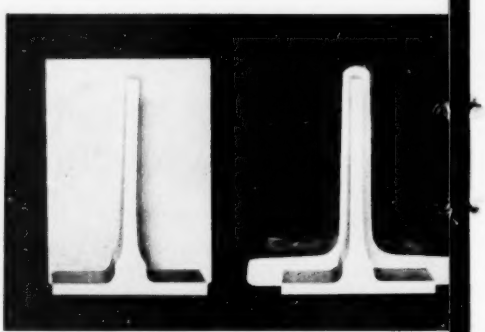
● Wing flap supports for Consolidated Vultee's Model 340 Convair airliners are stronger, cost *less*, and are of better quality now that they are made from hot-rolled sections of U·S·S CARILLOY steel.

When J. C. Peacock Co., of Los Angeles, California, started making these T-shaped flap tracks for Convair, the accepted practice was to machine them from $2\frac{1}{4}$" x $3\frac{1}{4}$" bars of alloy steel. But machining took a lot of time, and more than 50% of the stock metal was wasted in scrap.

Peacock and Convair engineers studied the problem and soon realized that they could shorten machining time and reduce scrap losses by fabricating directly from rolled sections. The question was, where to find a good supply of steel that would meet all the exacting quality requirements. U.S. Steel came through for them, by providing hot-rolled T-sections of CARILLOY 4140 steel.

This steel is giving excellent results. Not only are the CARILLOY parts *stronger* than those formerly used, but they require 4 hours less machining time, and reduce scrap losses 60%. What's more, finished tracks now cost only *one-fourth* as much as they did before.

Our experienced metallurgists may be able to help you make similar savings on *your* products. Call our nearest District Office. Chances are, we can supply just the steel and the form you need.



LEFT, the T-shaped cross-section of a flap track in front of a $2\frac{1}{4}$" x $3\frac{1}{4}$" steel bar shows how much metal was formerly wasted. RIGHT, the same flap track in front of the CARILLOY T-section that cuts scrap loss 60%.

### U·S·S CARILLOY STEELS ARE PRODUCED IN THE WIDEST AVAILABLE RANGE OF ANALYSES, SIZES, FORMS, HEAT TREATMENTS, AND TO HIGHEST QUALITY STANDARDS

● Complete, *integrated* alloy steel producing and finishing facilities make it possible to furnish CARILLOY steels to meet practically any requirement.

If you need forging ingots, blooms, billets or slabs . . . square bars, round bars, coiled bars, spring flats or special sections . . . plates, sheet, strip, sketch plates or structural shapes—

If you use bearing steel, aircraft steels, gear steels . . . NITRALLOY steels . . . regular or special analysis alloys—

If the steel must be quenched and tempered . . . regular or spheroidized annealed . . . normalized . . . stress relieved or tempered . . . or needs other special heat treatments—

If you want it hot rolled . . . in straight lengths or coiled . . . machine or gag straightened . . . flattened . . . machine, cracker or torch cut . . . pickled . . . sand blasted, oiled or limed—

Whatever your specifications call for —we can provide.

### Free metallurgical assistance available on any steel problem

**To help you use CARILLOY steels most efficiently, we place at your disposal the best metallurgical talent available. These men—many of them recognized authorities in the field of steel metallurgy—can call upon the facilities of the most extensive steel research laboratories in America. Their recommendations to you can be entirely unbiased because they have the most comprehensive range of metallurgy's finest quality steels from which to fill your needs.**

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UNITED STATES STEEL

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The new G Bond holds each abrasive grain for maximum cutting action. Then, *just when it should,* it lets go, assuring a grinding surface of constant peak efficiency.

As a result, Norton ALUNDUM* grinding wheels made with the new G Bond have definite advantages that are *proved* in the more economical, more profitable work they do.

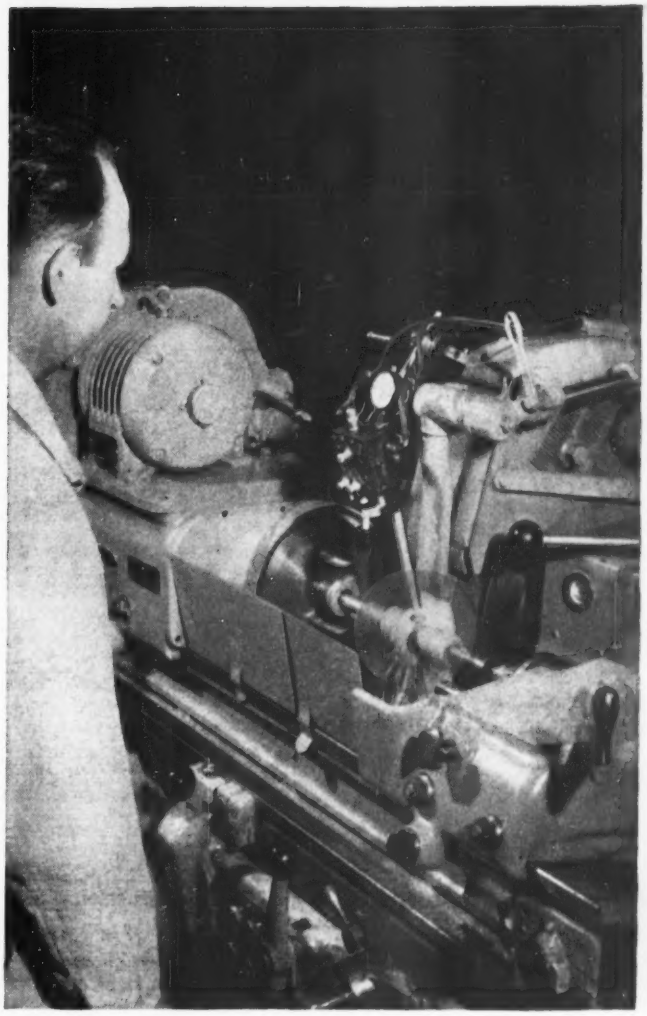
Make sure you add the new "Touch of Gold" to *your* grinding.

**SEE YOUR NORTON DISTRIBUTOR**

about arranging a test of one of the new G Bond ALUNDUM wheels in your plant. Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts.

NORTON
ABRASIVES

*Making better products to make other products better*



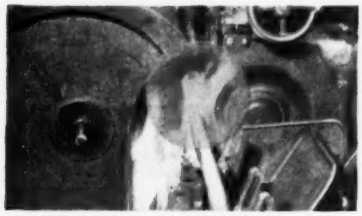
**THE "TOUCH OF GOLD" IS JOB-PROVED.** The new Norton G Bond ALUNDUM wheels have been thoroughly field-tested in such types of grinding as cylindrical, centerless, surface, internal, gear, tool and cutter, form and thread grinding, and saw gumming.

**7 BIG ADVANTAGES**
**Norton G Bond ALUNDUM wheels:**

- Do more work per wheel
- Cut freer, cooler, faster
- Dress easier — more pieces per dressing
- Cover a wider range of jobs
- Hold shape — better for form grinding
- Hold corners better
- Ideal for crush dressing

W-1477

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries



**YOU CAN SEE THE DIFFERENCE . . .** The spark stream from a Norton G Bond ALUNDUM wheel is more continuous, more even, indicating uniformity of wheel structure and of cutting action.

**YOU CAN HEAR THE DIFFERENCE . . .** Norton G Bond wheels grind with the pleasant, steady swish-h-h of free, easy cutting. You hear no harsh grinding noise.

**YOU CAN PROVE THE DIFFERENCE . . .** From general purpose to high production work, every job you do with the new G Bond wheels will benefit by the unique cutting action that grinds faster, freer and cooler.

# Why should your screw machine designs specify aluminum?

THERE ARE three *good* reasons why your screw machine parts should be made from *aluminum*—Kaiser Aluminum!

**1. Your raw material costs will be far less with aluminum!** The recent price increases in other nonferrous metals means that aluminum now gives you an even *greater* cost advantage than ever before. Aluminum gives you more machined pieces per pound because it weighs only $\frac{1}{3}$ as much as other commonly used materials. And recoverable aluminum scrap is high in market value.

**2. You can improve your product with aluminum!** However diversified your screw machine designs may be, aluminum's unique combination of properties probably can greatly improve the quality of the finished part. These properties include: lightness, strength, corrosion resistance, heat and electrical conductivity, heat and light reflectivity and beauty.

**3. You can speed production with aluminum!** Aluminum alloys are ideal for automatic screw machine work. They are free machining and can usually be cut at high speeds and feeds to insure a high rate of production. And this fast production enables you to take advantage of the low raw material costs of aluminum.

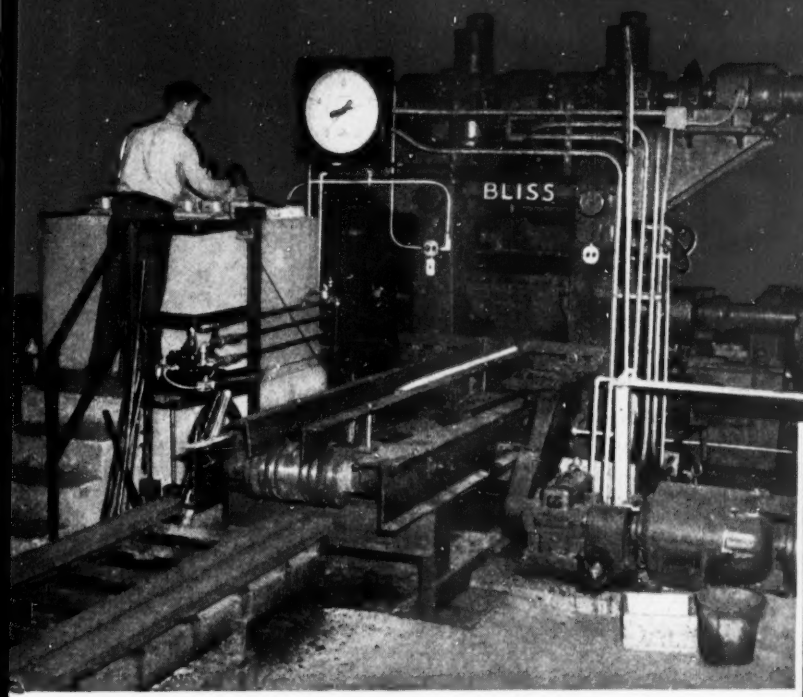
**Start now to profit with aluminum!** Without obligation, Kaiser Aluminum engineers will be glad to give you their experienced assistance with alloy selection, design considerations and production techniques.

Prompt deliveries of round and hexagonal aluminum screw machine stock are now being made by us and our distributors. Our local number is listed in your classified telephone directory under the heading "Aluminum." Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California.

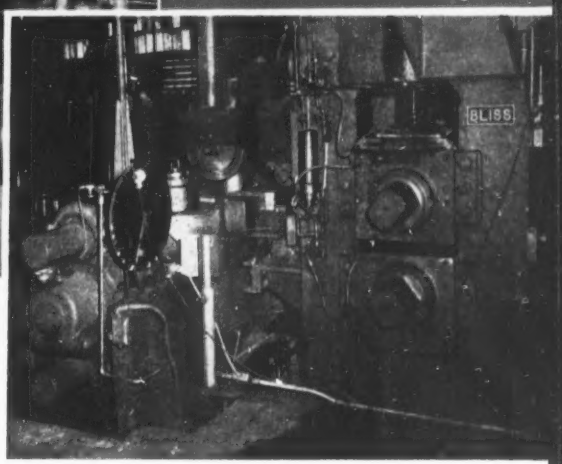
**Kaiser Aluminum**

**setting the pace—in growth, quality and service**

# Ohio Knife trims rolling time 50% with New BLISS Hot Mill and Edger




Laminated metal, with soft inside core surrounded by hard alloy steels, is hot rolled in this Bliss 19" x 24" Two-High Reversible Mill powered by an AC motor.




## Combination of mill, edger and run-out table reduces material-handling manhours by 80%

Proof that the right combination of equipment and methods can contribute startling performance exists at the Ohio Knife Company of Cincinnati. Here, a new Bliss Two-High Mill and Edger hot roll 5" square stock in six passes to 3⅞", holding tolerances within ±0.005". Aside from mill accuracy on daily production runs of as long as 20 hours, Ohio Knife Company officials report that rolling time has been reduced 50%; and material-handling time, 80%.

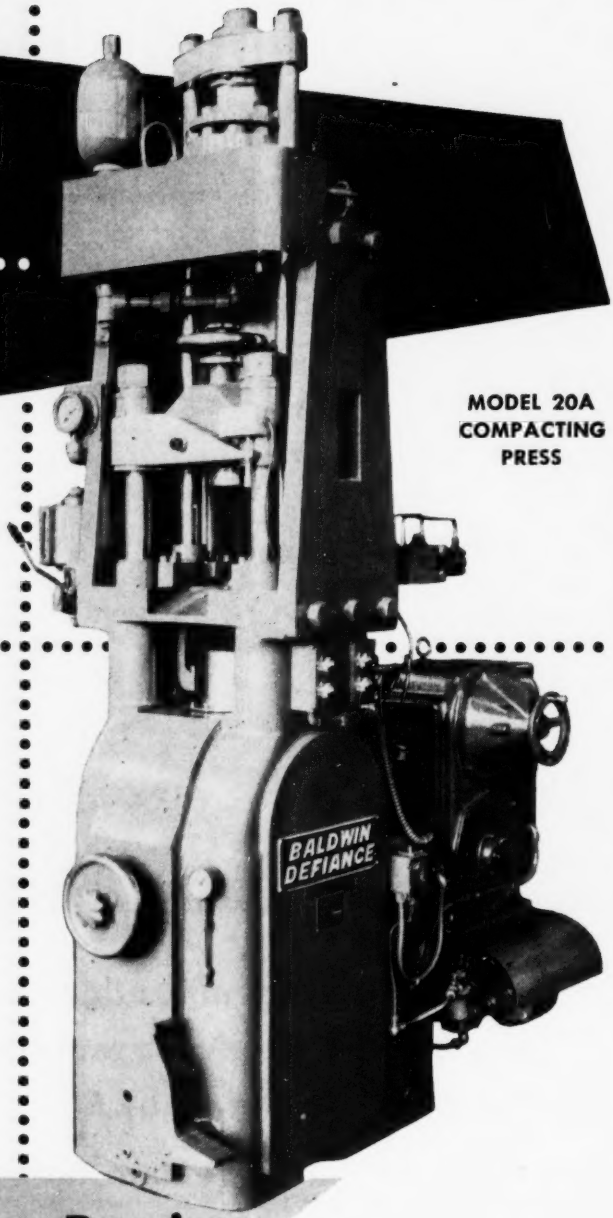
Recommending designs and methods for efficient metal rolling has been the job of Bliss Rolling Mill Engineers for nearly fifty years. Examples of advanced Bliss mill engineering can be found in many steel, brass, aluminum and specialty plants. Consult Bliss on your next rolling mill equipment problem. And write for our 52-page brochure: "Bliss Mills and Accessories."

E. W. Bliss Company, General Office: Canton, Ohio
ROLLING MILL DIVISION: SALEM, OHIO
E. W. Bliss (England) Ltd., Derby, England
E. W. Bliss Company (Paris), St. Ouen sur Seine, France

**Branch offices** in Chicago, Cleveland, Dayton, Detroit, Indianapolis, New Haven, New York, Philadelphia, Rochester, Toledo and Toronto, Canada. **West Coast Representatives:** Moore Machinery Company, Los Angeles and San Francisco; Star Machinery Company, Seattle. **Other dealers** in United States cities and throughout the world.

*Remember:*
**for Presses, ROLLING MILLS, Special Machinery...** *It's Bliss*

# APPLIANCE PARTS COMPACTED TO UNIFORM DENSITIES... with a BALDWIN




MODEL 20A COMPACTING PRESS

**THE PROBLEM:**

**One of the leading appliance manufacturers found it very hard to get parts of uniform density when compacting powdered metals.**

**THE BALDWIN SOLUTION:**

**By switching to Baldwin's Model 20-A, they are able now to compact parts of the desired uniformity. Specially designed for compacting powdered metals, this 75 ton press and Model 45-A (200 ton capacity) consistently produce compacts of even density for two reasons:**

1. **The Balanced alignment** of the punch and die is assured by Baldwin's exclusive construction . . . the punch is mounted on a rigid four-column guided head, permitting no deviation from the direct up and down motion which maintains such constant pressures.

2. **The Efficient feeder** distributes the powder in the die more evenly because it is the reciprocating type that moves in and out over the die with a very smooth motion. Moreover, the feeder's cleanline design eliminates all recesses or projections that might keep the powder from filling the die cavity completely.

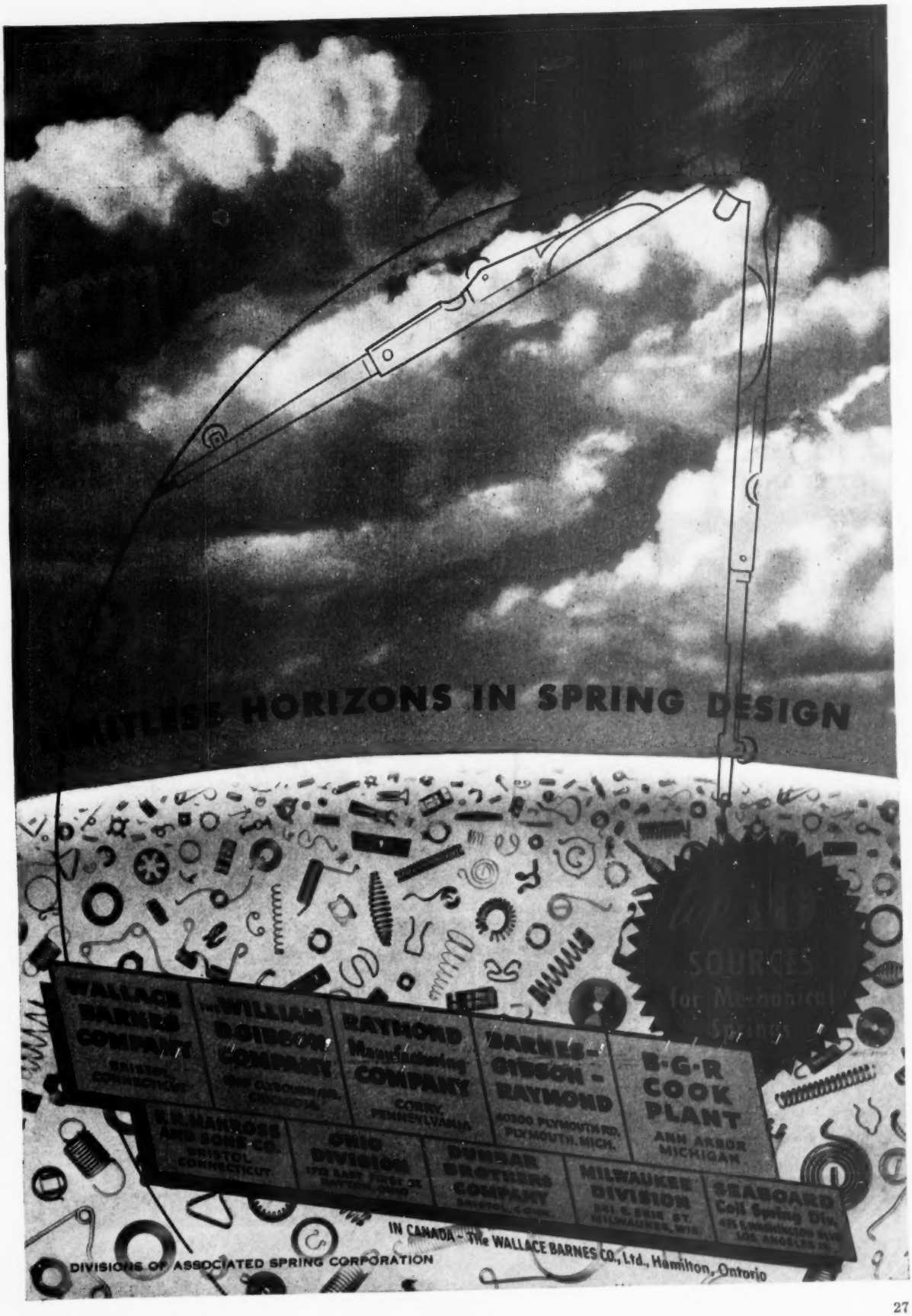
## What's Your Pressing Problem?

BALDWIN · BLH · LIMA-HAMILTON

*For help in solving any of your compacting problems, you can count on the Baldwin Research and Development Laboratory. Please write for Bulletin 3100 to Dept. 4046, Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.*

# BALDWIN-LIMA-HAMILTON

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities


HORIZONS IN SPRING DESIGN
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BRISTOL, CONNECTICUT
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CORRY, PENNSYLVANIA
BARNES-GIBSON-RAYMOND
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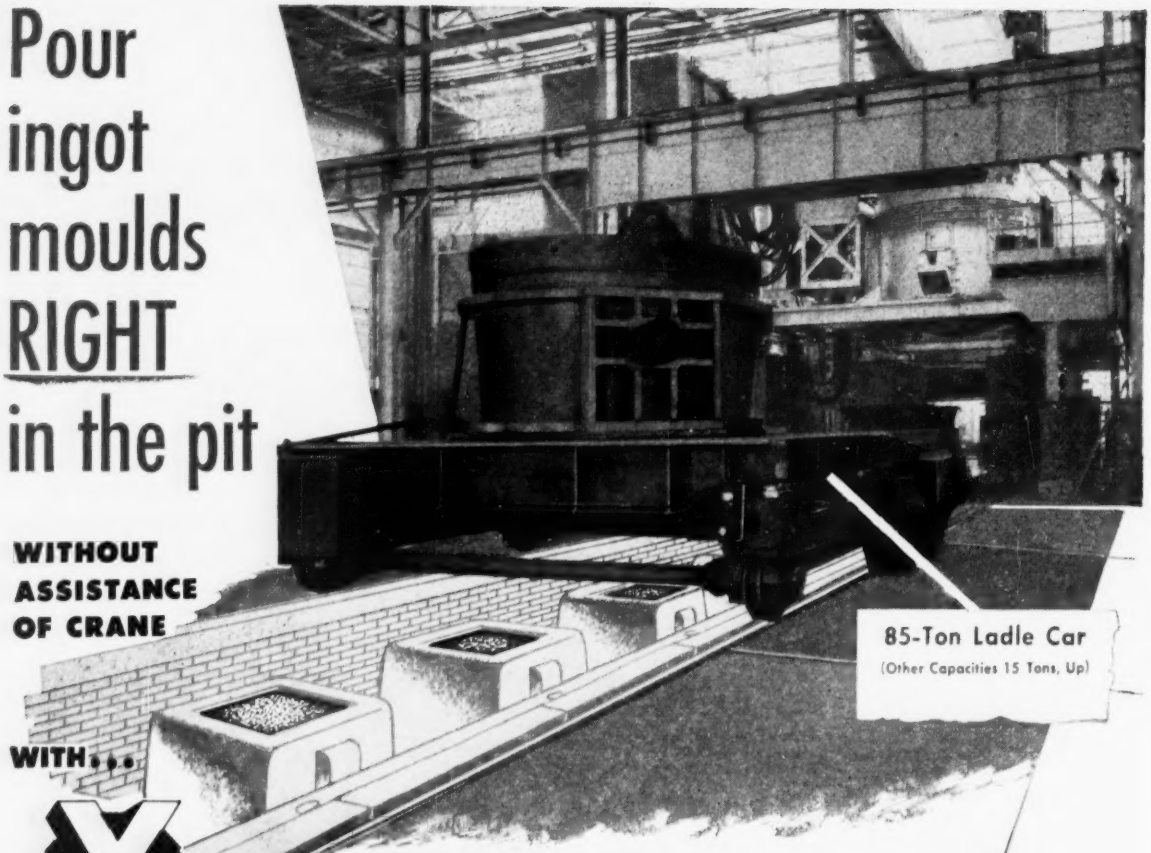
DIVISIONS OF ASSOCIATED SPRING CORPORATION

# Pour ingot moulds RIGHT in the pit

**WITHOUT ASSISTANCE OF CRANE**

**WITH . . .**




## F&Y GANTRY LADLE CAR

*relieves the "bottle-neck" caused by limited crane capacity*

**The 85-ton Gantry Ladle Car pictured is "paying off" in an eastern steel mill by speeding up pouring and improving plant efficiency. You can save time and money by using this modern economical method of increasing tonnage output.**

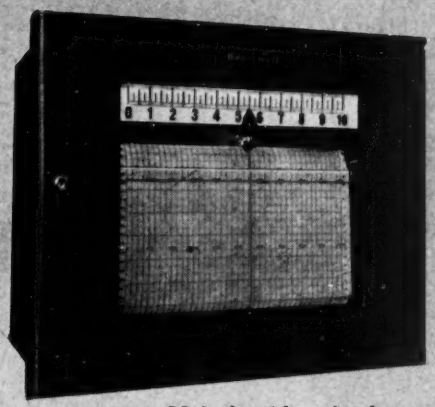
*these features*

- ☐ Designed to Suit Your Ladle
- ☐ Sturdy Construction Throughout
- ☐ Positive, Simple, Push-Button Control
- ☐ Electric Motor Driven
- ☐ Moves on Track over Pit
- ☐ Roller Bearing Wheel Journals
- ☐ Easy and Economical to Operate

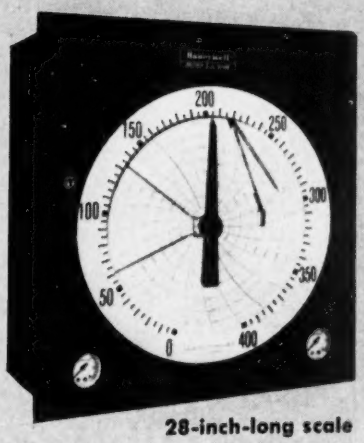
**The Youngstown Foundry & Machine Co.**

OVER SIXTY YEARS OF SERVICE TO THE STEEL INDUSTRY

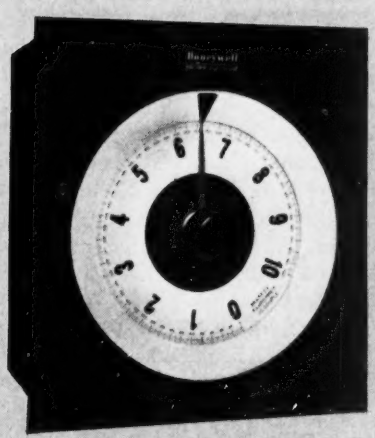
*Youngstown, Ohio*



11-inch-wide strip chart



28-inch-long scale



"12 o'clock" control check

# Since 1940 —

# *Laboratory accuracy* for *production control...* with *ElectroniK* instruments

FOR the last fourteen years *ElectroniK* instruments have been an important part of the industrial scene . . . for they were the first to bring high-speed, continuous measurement and control into practical reality in industry.

They made news then, by placing laboratory accuracy in the hands of production men . . . permitting them to achieve improvements in quality and efficiency that can be obtained only through more exact process control. And they're still making news today . . . helping to guide complex, precise, process operations.

These versatile instruments can measure, and often control, practically any process variable . . . temperature, flow, pH, conductivity, humidity, weight and dozens of others. They are available as indicators, recorders, and electric or pneumatic controllers . . . in many control variations, capable of handling the toughest assignments.

An outstanding record of dependability, accuracy and ease of maintenance has earned *ElectroniK* instruments an enviable reputation of accomplishment throughout industry. This stems from rugged, service-tested design of every component . . . design that assures uninterrupted service, optimum operation.

Your local Honeywell engineering representative will be glad to discuss how *ElectroniK* instruments can help in your lab or plant. Call him today . . . he is as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division*, 4462 Wayne Ave., Philadelphia 44, Pa.

MINNEAPOLIS
**Honeywell**
BROWN INSTRUMENTS
*First in Controls*

# Here's all the data you need on Allegheny Metal Plates

**For certified data on individual grades of Stainless Steel, use**

**ALLEGHENY LUDLUM BLUE SHEETS**

There is a Blue Sheet for each individual grade of Allegheny Metal, giving full information on its physical and chemical properties and characteristics. Let us send you this certified, laboratory-proved data on the stainless grades in which you are interested.

**ADDRESS DEPT. S-41**

## WRITE FOR YOUR COPY!

For any job which involves the handling of large volumes, heat and high pressures—either singly or all at one time—Allegheny Metal solid or clad plates are produced in the exact stainless grade required to combat corrosion, oxidation and contamination of the product.

Some of these grades are *new* . . . comparatively recent developments of our research and experience as a pioneer and leader in stainless steel production. Others are improved versions of older analyses. The latest information on the entire subject of stainless plates is available to you in the booklet illustrated above—32 pages of valuable data on types, sizes, finishes, fabricating methods and uses, including ASTM and ASME boiler codes.

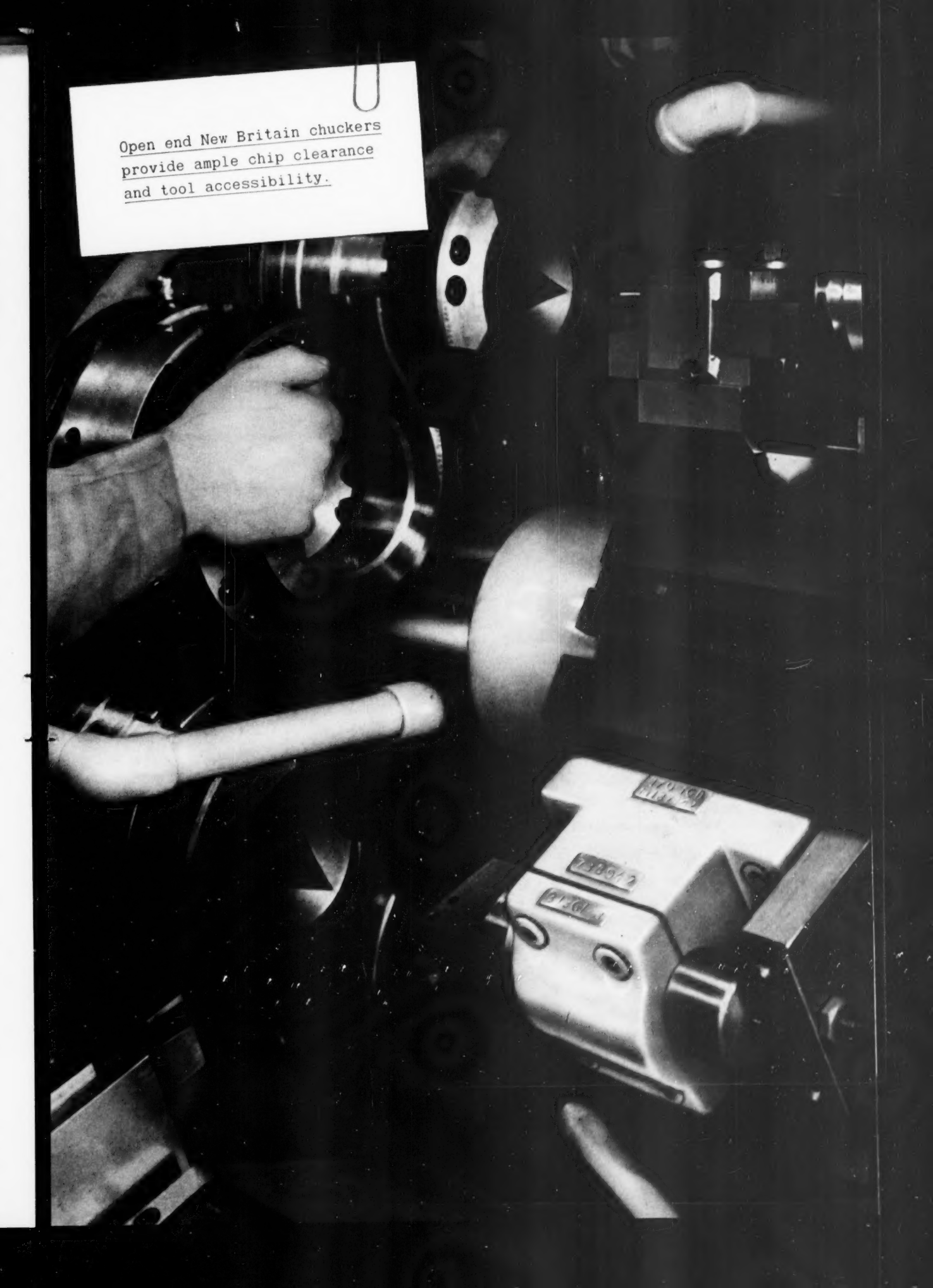
Specify "Allegheny Metal" for complete reliability in stainless steel plates, and write for your copy of the A-L Plate Book. ● *Address Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.*

You can make it **BETTER** with

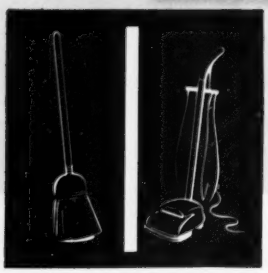
# Allegheny Metal

WAD 4877

AL TIME-TESTED STAINLESS STEEL



Open end New Britain chuckers provide ample chip clearance and tool accessibility.

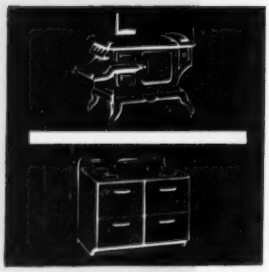


# Machines for Making Progress

Try and find a manufactured product that hasn't been made better looking and easier to use than the similar product of even a few years ago.

The most amazing thing about these manufactured goods of today is that they cost the user relatively little more, or no more than they did when manufacturing costs were half what they are today.

The answer is not hard to find if you look inside the factories of leading manufacturers . . . more and more new and better automatic machines, making the most of new materials, and each performing more and more operations with greater speed.



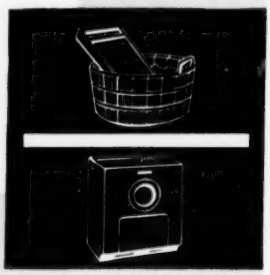
*Machines for making progress* are the tools for keeping the American economy at record breaking levels of prosperity. Many of these tools are New Britains. Illustrated are three which have provided cost cutting answers to literally thousands of manufacturing problems. Are you using them for all they are worth? Your competition is.

AUTOMATIC BAR AND CHUCKING MACHINES
PRECISION BORING MACHINES
LUCAS HORIZONTAL BORING, DRILLING & MILLING MACHINES
NEW BRITAIN +GF+ COPYING LATHES

**THE**
**NEW BRITAIN MACHINE COMPANY**

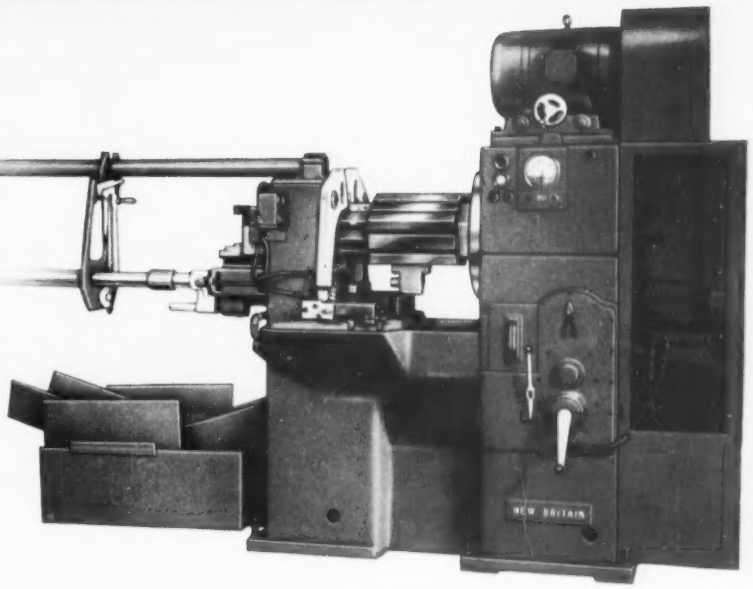
New Britain-Gridley Machine Division
New Britain, Connecticut

Lucas Machine Division
Cleveland 8, Ohio



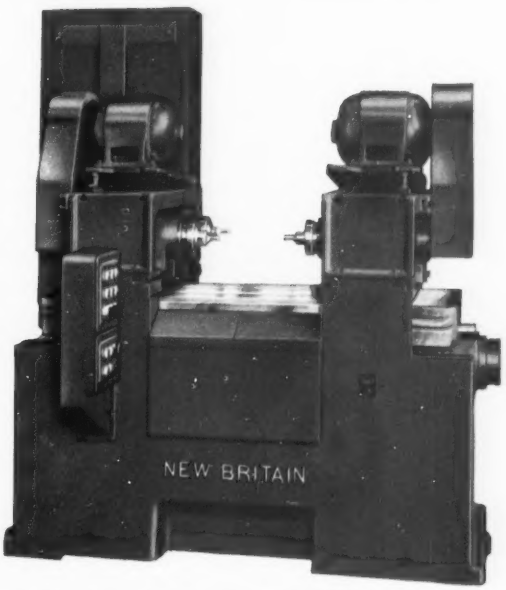
## Model 126

A new New Britain single spindle automatic which belongs in almost every turret lathe department – to cut costs on pieces which are on the border line between turret lathe and multiple spindle production. It is remarkable for its mechanical simplicity and simplicity of operation. A new approach in single spindle turning, it incorporates important features which *guarantee* the quick set up essential to economical production and manpower savings, on both short and long runs.



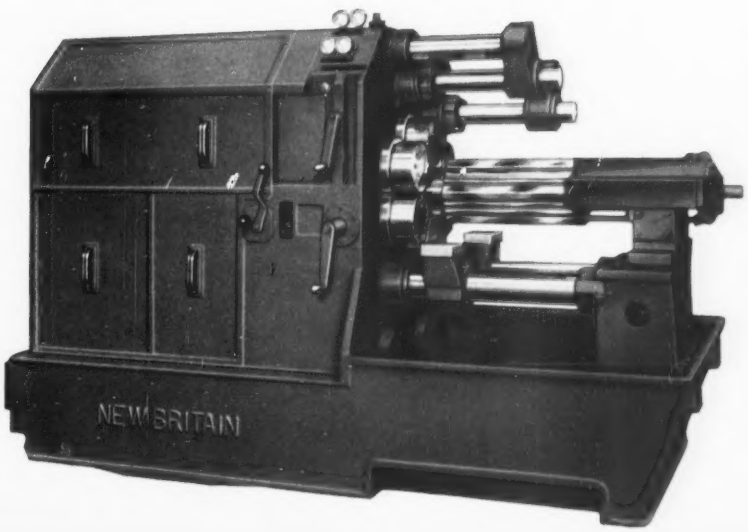
## Model 50

The New Britain double end, tool or work rotating precision boring machine specifically designed for products requiring the most exacting accuracy at high production rates. Tooling set ups and types of pieces machined are practically unlimited. Both double end and single end jobs can be profitably produced on this machine by the use of its automatic cycling features.




## Model 675

Six spindle automatic chucking machine. This famous line of New Britain Automatics includes four, six and eight spindle machines, all notable for maximum rigidity, accessibility and permanent accuracy. Open end construction makes tooling, loading, operating adjustments and chip removal simple and easy, reducing down time to a minimum. This, combined with ample power and high spindle speeds, makes New Britain Chuckers outstanding for sustained high production.



Interchangeable preset cams provide full range of cross slide feeds on New Britain's new single spindle automatic.

# The man on the job..

# wants VICTOR'S Versatility !!

This man with a VICTOR torch welds mild steel extension handles onto high carbon pliers—a small and ticklish job. The same torch, by simple change of nozzles and tips, can be quickly converted to new job needs, such as welding large castings, heating, brazing, descaling, flame priming, soldering—or to cutting, by addition of cutting attachment.

VICTOR's precision-built apparatus also gives you better flame control, saves gas, gets work done faster. Ask your VICTOR dealer for an on-the-job demonstration NOW.

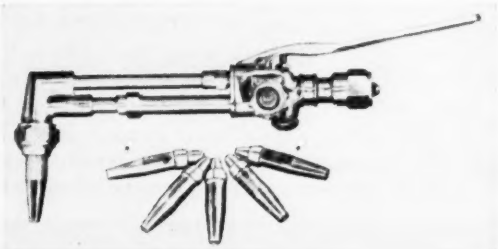
**LOOK FOR THE VICTOR DEALER SIGN!**

VICTOR

Welding and Cutting Equipment

Ask him to show you why it costs less to own and operate VICTOR.

Dealer inquiries invited.



**Model 2450 Cutting Attachment for VICTOR 300 Series Welding Torches cuts metal up to 8" thick.**

## VICTOR EQUIPMENT COMPANY

**3821 Santa Fe Ave.**
**LOS ANGELES 58**

**844 Folsom Street**
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**1312 W. Lake St.**
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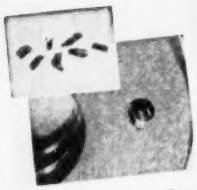
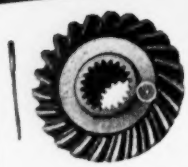
# METAL DISINTEGRATION

## and what it can do for you . . .

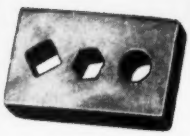


Remove Broken Taps fast without distortion

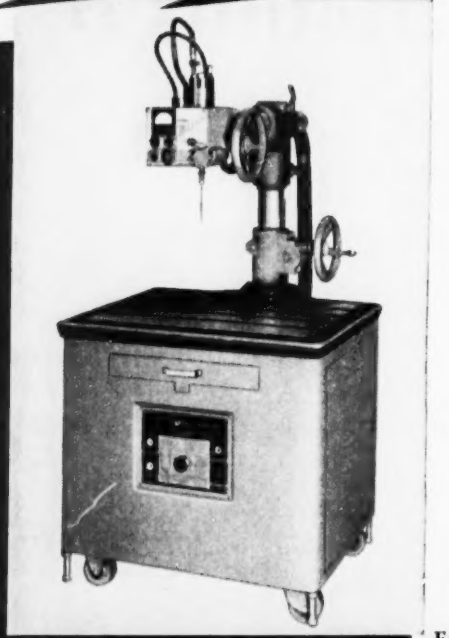


Cut oil holes in hardened gears without annealing

Cut dovetails in hardened dies



Cut any shape hole in cemented carbides



Literally hundreds of thousands of dollars are saved annually by corporations that are using Metalmasters in just tool and die repair alone.

There's a technical engineer in your area to give you an on-the-spot demonstration in your own plant at your convenience. (NOTE: It is not uncommon to pay for a Metalmaster with just one short demonstration thru savings on workpieces.)

For information as to the Metalmasters' uses and benefits merely write today on your company letterhead to:

*Metalmaster*

DIVISION OF CLINTON MACHINE COMPANY

**CLINTON, MICHIGAN**

# Call for Republic's Pig Iron Metallurgist

We don't guarantee his versatility with a coffee pot, but when it comes to a foundry pouring problem, you can expect prompt, effective help from the Republic Pig Iron Metallurgist.

His knowledge of foundry operations is based upon a combination of metallurgical training and actual foundry experience . . . years of it. He knows how and why irons behave as they do at different temperatures . . . knows what to do, within equipment limitations, when problems upset the profit picture.

You can trust this man to respect your confidence, too, just as he has for hundreds of other foundries—large and small. His only obligation is to you . . . to help solve your problems in the fastest, most efficient way possible.

There is no charge for the services of the Republic Pig Iron Metallurgist. Just write, wire or phone and you'll hear from him promptly.

**REPUBLIC STEEL CORPORATION**
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

Republic PIG IRON

"CHATEAUGAY" Low-Phosphorus, Copper-Free

"REPUBLIC" (Northern) Foundry, Basic and Malleable

"PIONEER" (Southern) Foundry and Basic

REPUBLIC STEEL

# NIAGARA Inclinable Presses

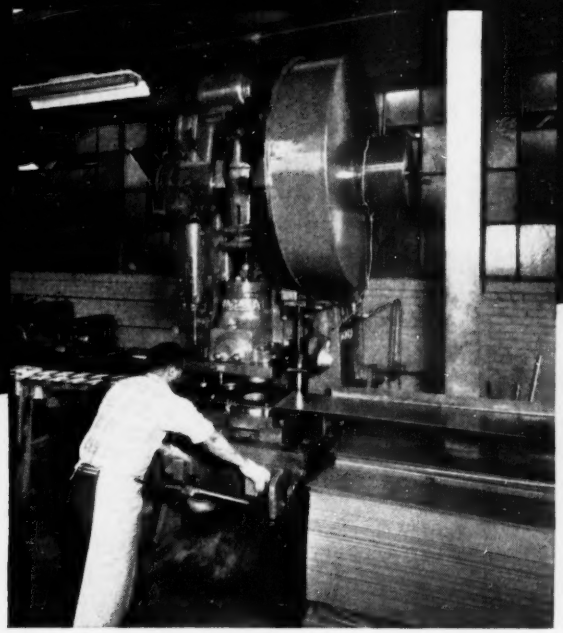
Niagara Inclinable Presses with Air Sleeve Clutch cannot be matched for economy, efficiency and dependability on jobs requiring high frequency clutch engagement.

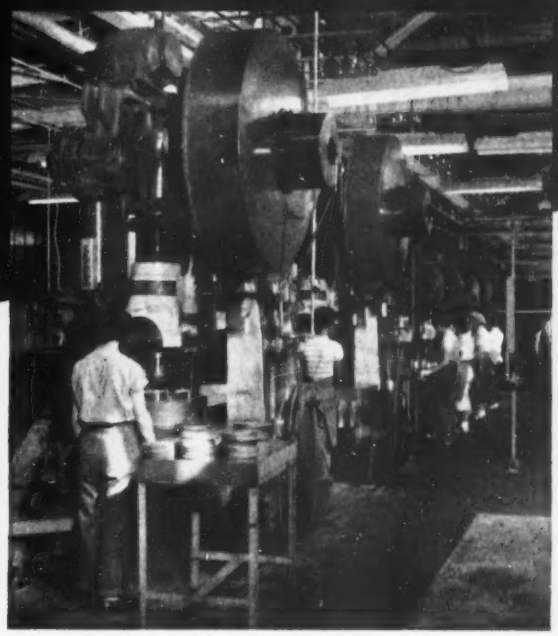
*Write for information.*

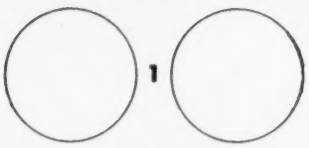
**NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.**

# On the Production Line

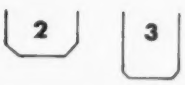
## AT SHWAYDER BROTHERS, INC., DETROIT



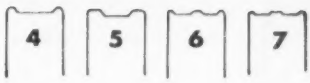





1. Punching two round blanks per stroke on Niagara A-5½ Press with Air Sleeve Clutch.

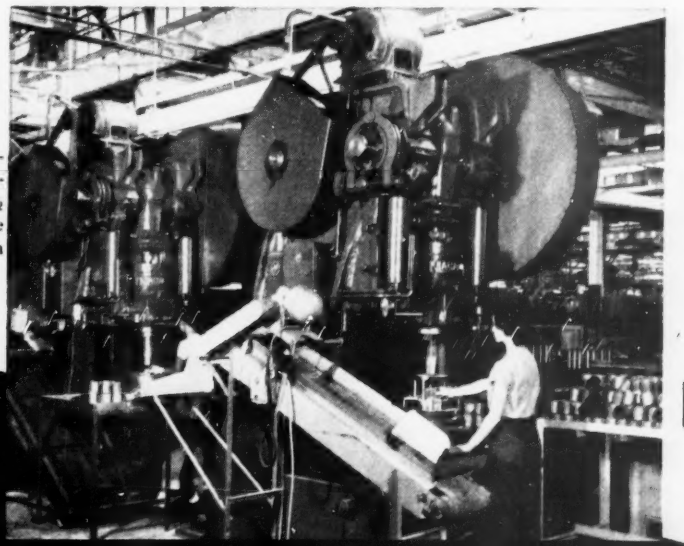



2, 3. Cupping and Redrawing on A-5½ Presses with Air Sleeve Clutches.




4, 5, 6, 7. Indenting end on A-3½ Presses.

8, 9. Forming hexagonal shape and Ironing side wall on A-5½ Presses with Air Sleeve Clutches and with Niagara Cushions.



The final piercing and tapering operations are done on A-3½ Presses (not shown.)

**NIAGARA**

*America's Most Complete Line of Presses, Shears, Machines and Tools for Sheet Metal Work*

**DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK • PHILADELPHIA**

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"Buffalo"

# Tips on Metal Bending

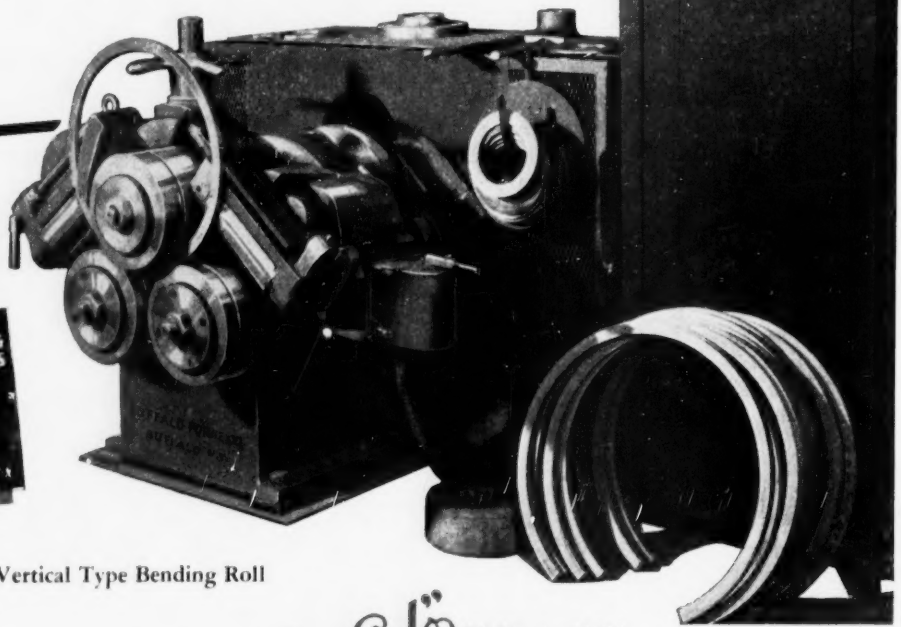
"Buffalo" BENDING ROLLS CAN SAVE YOU MONEY!

PROBLEM: Bend commercially perfect circles, arcs or spirals at a profitable production speed from any of these standard sections:

1. Angles, leg-out
2. Angles, leg-in
3. Beams on flanges
4. Channels, flanges in or out
5. Flats on edge
6. Flats on flat
7. Rounds
8. Squares
9. Copper tubes
10. Standard St. pipe
11. X heavy pipe
12. XX heavy pipe

SOLUTION: Use a "Buffalo" Bending Roll. It handles all these jobs and more, faster and cheaper than any other method.

Why not write for Bulletins 3344-A and 352-B today?



"Buffalo" Vertical Type Bending Roll

"Buffalo" MACHINE TOOLS

**BUFFALO FORGE COMPANY**

158 MORTIMER STREET BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DIAMOND JUBILEE 75TH ANNIVERSARY

DRILLING PUNCHING SHEARING CUTTING BENDING

INTRODUCING . . . the new member of the Dravo Space Heater family

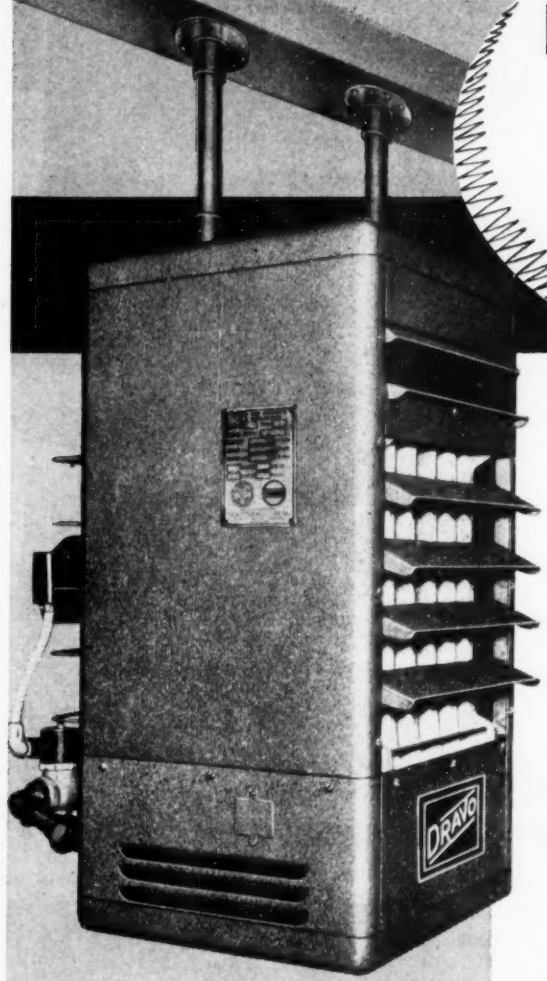
# DRAVO GAS-FIRED

## *Suspended Type*

# UNIT HEATER

*—for heating and ventilating commercial and industrial buildings*

*—for process drying*




Now . . . Dravo Corporation offers you the new Dravo Gas-Fired Unit Heater, ideal for installations requiring a heating output of 68,000 to 172,000 Btu. This new addition, joining the Dravo *Counterflo* Space Heater models, makes available a range of Dravo Heaters from 68,000 to 2,000,000 Btu.

### ENGINEERED DESIGN

The Dravo Gas-Fired Unit Heater is ruggedly constructed with a cast iron heat exchanger, cast iron burners and a heavy-gauge steel exterior jacket with baked enamel finish . . . all designed for years of satisfactory service.

### EASY INSTALLATION

The Dravo Gas-Fired Unit Heater is delivered completely assembled. Installation requires only hooking up gas connection and exhaust stack. Units are wall-hung or suspended from roof trusses to conserve valuable floor space.

### DESIGNED FOR SAFETY

Dravo Gas-Fired Unit Heaters are approved by American Gas Association and listed by Underwriters' Laboratories, Inc. Safety pilot turns off gas automatically if the pilot light goes out or burns too low for perfect ignition. The cast iron heat exchanger and combustion chamber withstand corrosion and will not burn out.

### EFFICIENT OPERATION

The Dravo Gas-Fired Unit Heater has a minimum heating efficiency of 80%. The draft hood prevents down drafts, absorbs all excessive chimney action and conserves heat. The heater delivers the exact amount of heat where you want it . . . when you want it. Automatic thermostat controls are available if desired.

### AVAILABLE NOW

Units are available in a variety of sizes from 68,000 to 172,000 Btu, equipped with a fan or blower. Blower models are recommended for installations requiring heated air at greater velocity or against greater static pressure.

### WRITE FOR INFORMATION

Get the complete details now describing the new Dravo Gas-Fired Unit Heater. Use the coupon.

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Fifth and Liberty Avenues, Pittsburgh 22, Penna.

☐ I want complete information on the new Dravo Gas-Fired Unit Heater. ☐ Please send me Bulletin No. OP5 -02

☐ Please have a representative call.

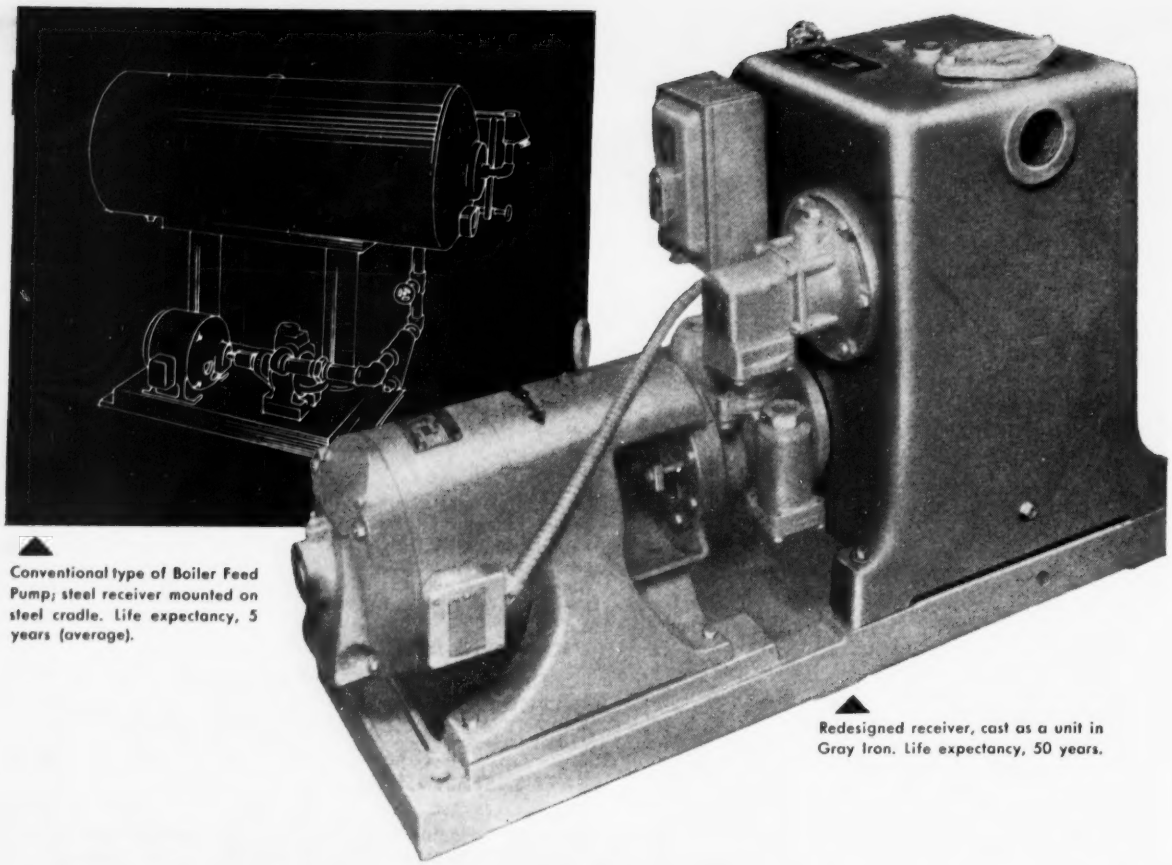
Name_____

Title_____

Company_____

Address_____

City_____ Zone____ State_____



Conventional type of Boiler Feed Pump; steel receiver mounted on steel cradle. Life expectancy, 5 years (average).

Redesigned receiver, cast as a unit in Gray Iron. Life expectancy, 50 years.

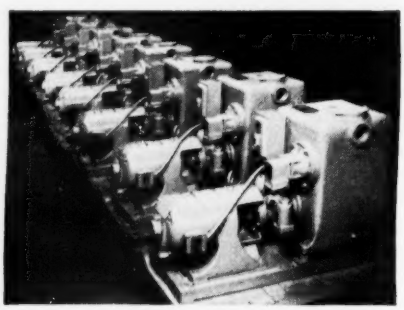
# COST SAVINGS BUILT IN by practical use of GRAY IRON!

In Boiler Feed Pumps, first cost is less important than long-time economy. Because water conditions often cause certain materials to deteriorate rapidly, replacement costs are frequently high.

When a leading manufacturer replaced the conventional steel tank with a Gray Iron casting, here's what happened:

- In spite of somewhat higher initial cost, savings at the end of a 5-year period amounted to 38%—including replacement cost of steel tank, plus labor and fittings. This important saving in replacement cost will be realized every 5 years for approximately 50 years.
- By designing for the cast Gray Iron receiver and sub-base mounting, space requirements were reduced—excess piping, valves and fittings were eliminated.

Have you analyzed *your* product for possible cost savings which can be accomplished by designing for and with Gray Iron? Write for technical information on the many advantages of the Gray Iron casting process.

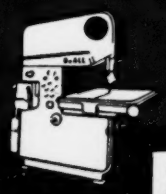


Boiler Feed Pumps with Gray Iron receivers, built for U. S. Navy.

**Make it Better with Gray Iron . . .**
**Second largest industry in the metal-working field**

## GRAY IRON FOUNDERS' SOCIETY, INC.

*NATIONAL CITY-E. 6th BLDG., CLEVELAND 14, OHIO*



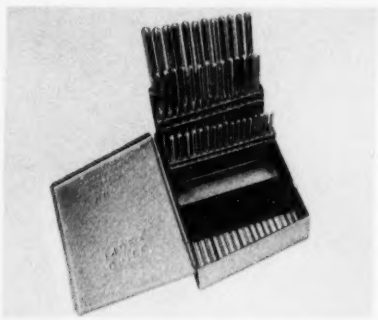

# PRODUCTION NEWS

SAW BANDS • GAGING EQUIPMENT • TOOL STEEL • CUTTING TOOLS • INDUSTRIAL SUPPLIES

Vol. 2 Published by The DoALL Company, 254 N. Laurel Ave., Des Plaines, Illinois No. 3


## DoALL Reamers, Ground After Hardening, Last Longer, Cut Costs

Ground Flute Reamers, used in production where costs are figured per hole, have been proved to give more holes per sharpening and to save time and money. Holes are more accurate for the simple reason that grinding after hardening eliminates distortion.



Reamers 5/16" and smaller are ground from a solid which gives them a uniform hardness throughout. The fine cutting edges give a smoother surface finish on holes due to the fact that both faces are ground. They also permit faster feeds to be used, thereby reducing the amount of downtime on the production line while the tools are being reground.

Additional information on the many different types of reamer sets which are standard stock items, is available from your local DoALL stores.

# New DoALL Thread Ring Gages Provide Accuracy Not Obtainable with Conventional Types

### Other Features Include Longer Life, Greater Stability and Lighter Weight

The unique design of the new DoALL Adjustable Thread Ring Gage provides a degree of accuracy in thread inspection not obtainable with an ordinary adjustable gage. Near-perfect roundness and alignment of threads are assured throughout the entire adjustment range. For example, maximum out-of-roundness is only .0002" after .005" takeup.

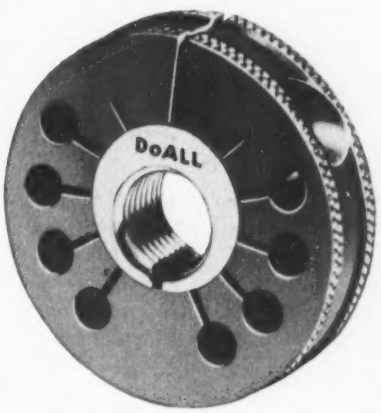
The gage locks securely in alignment so that the setting will not be changed by impacts that would jar an ordinary thread ring gage out of adjustment.

Wear is distributed uniformly over the full circumference providing a life 2½ to 12 times that of conventional gages.

Weight is almost 60% less than that of ordinary thread rings, giving greater sensitivity, less operator fatigue and more accurate inspection.

Identification is positive, the outer body of the GO gage is green, of the NO-GO red.

Complete data and prices on thread ring and plug gages, cylindrical plug gages and plain rings are available. Free catalog, or information on special gages, furnished upon request.




## Accuracy, Stability DoALL Gage Compared with Conventional Gage

**DoALL GAGE**

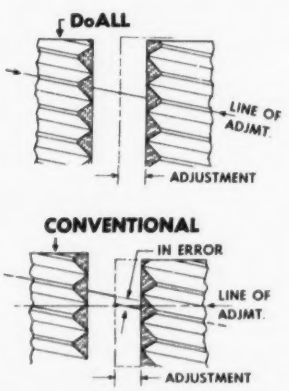
**Size adjustment is controlled along the thread helix angle.**

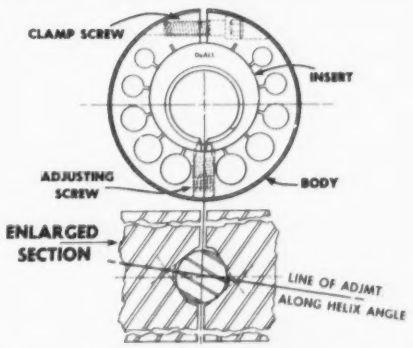
**The threads are held securely in alignment, after adjustment. These features of alignment and stability are due to unique adjustment means.**

**CONVENTIONAL**

**The old conventional thread ring adjusts parallel to sides thus producing offset (jump) in helix of thread.**

**The threads are shifted out of alignment after adjustment. They may be shifted even more by inadvertent knock at side of gage, as in ordinary shop use.**



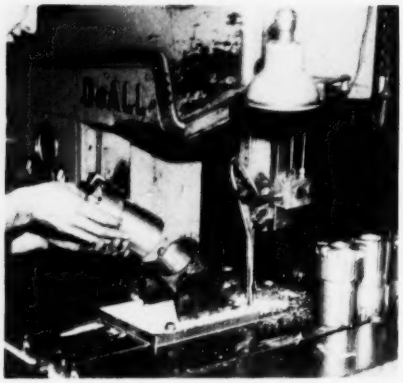

**ENLARGED SECTION**

**Showing contact of spherical nose on adjusting screw with pyramidical seat in insert. NOTE that the diagonal thru the seats is in line with thread helix angle, assuring adjustment along helix.**

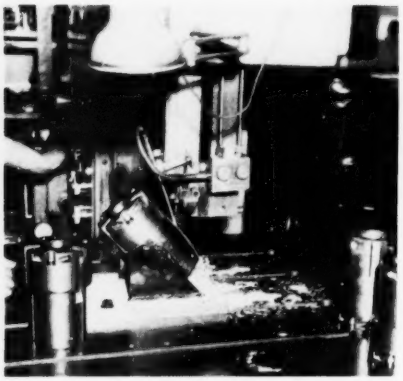
----See Next Page-->

# Use of Simple Fixtures Makes Possible

Removing excess stock from pinion shafts. Fixture holds five pieces. Hydraulic table feeds automatically.



Fixture for holding part to be slotted. No clamping required. Tolerance permits lining up by eye.



Part being slotted automatically on DoALL Contour-matic through use of simple holding fixture.

## "Claw-Tooth" Saw Band Overcomes Problems in Cutting Textolite

Accurate sawing of Textolite sheet plastic insulating material, into strips and shapes had become a major headache at the plant of a large electrical equipment manufacturer. In cutting of 36" long strips, particularly, a variety of saw bands had been tried but none would cut straight for any length of time. Special circular saws were then tried but the operation was difficult, time-consuming and waste was excessive.

Recognizing that there must be a solution to the job, the manufacturer called a DoALL Sawing Specialist for assistance. The answer proved to be simply the use of a DoALL Claw-Tooth Saw Band. Its hardened, positive rake angle teeth were ideally suited to cutting this particular material. Where blades formerly used frequently failed to cut one straight line, the Claw-Tooth Band cuts hundreds of 36" long strips rapidly and accurately.

Sawing problems almost invariably yield to the correct blade selection and application. Pitch, width, set, tooth design must all suit the requirement. The DoALL Band Tool Manual provides blade selection and application data for cutting over 600 materials. It is available for $2.00.

## DoALL's Eight Grades H.S.S. Tool Bits Provide Best Types for Each Job

A range of eight grades of High Speed Steel Tool Bits, both ground and unground, are carried in stock by DoALL to provide users a selection twice as great as commonly available. This makes possible choice of a bit that will have the best characteristics for any given job. The line includes two Molybdenum, two Tungsten and four Cobolt-Tungsten grades. All have uniform 63-65 Rockwell "C" hardness and all are made of electric furnace tool steel with grain size guaranteed uniform within a range of 10-14. This extreme uniformity of hardness and grain size insures maximum cutting rate and tool life.

Characteristics, recommended applications, tolerances, sizes and prices of DoALL High Speed Steel Tool Bits are contained in literature available upon request.

## DoALL Nawlide Plug Gage Outlasts Five Steel Gages; Saving Amounts to $114

After gaging 100,000 aluminum nose fuses at a large screw machine plant in Missouri, a *Nawlide* thread work plug gage supplied by DoALL is still in daily use. Past experience of this customer indicates that it would have been necessary to replace standard steel gages five or six times in order to gage a like number of pieces. The single *Nawlide* gage costs $114 less than five steel gages.

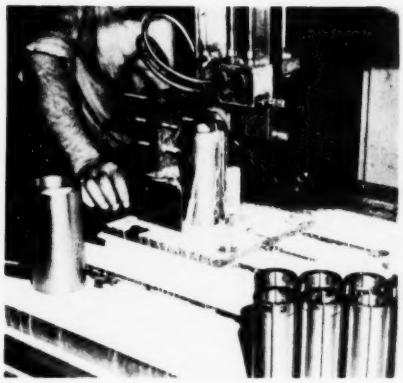
Complete data on Nawlide gages is available upon request.

The DoALL Plug and Ring Gage Catalog is available upon request.

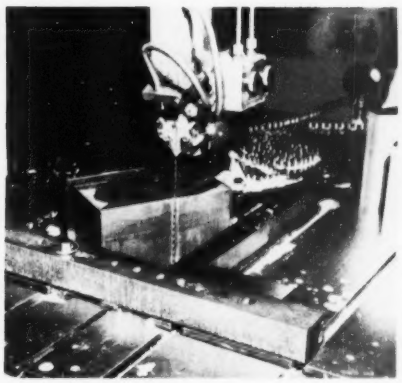
### *Did You Know . . .*

. . . that a recent survey shows that 2 out of 3 horizontal cut-off band saw users are not getting a profitable cutting rate or maximum blade life from their machines because of improper blade selection? That, time and again, DoALL Saw Specialists have produced "miraculous" improvements for the user by recommending a different set pattern, blade type, blade width, number of teeth per inch or a combination of these factors to cut specific materials? This is no magic! It is simply the "know-how" DoALL Specialists gained by the research and field experience of the world's largest exclusive manufacturer of saw bands. Call DoALL for this free service.

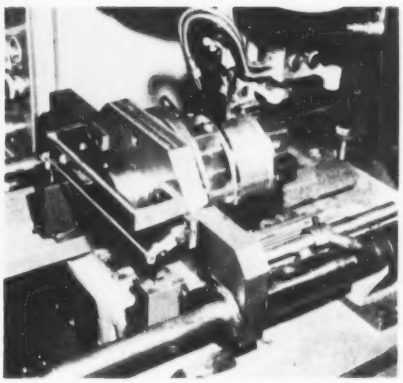
# Low Cost Mass Production Bandsawing



Production slotting of bushings, using fixture and special heavy gage DoALL Saw Band to produce desired slot width.



Making angle cuts using a back-up bar bolted to the table and a square bolted to the back-up bar. Fully adjustable.



Splitting heavy duty bearings up to 11" dia. x 14" length. Fixture slide rods are adjustable for bearing length.

How the use of simple fixtures bolted to DoALL power feed bandsaw tables extends the range of usefulness of the machines in mass production sawing can be seen from the accompanying illustrations. Many production jobs that would otherwise be performed on slower, more expensive machine tools are now being done on band machines because of the user's ingenuity in devising work holders, back-up bars, stop-blocks and other fixtures. With these setups, straight or contour cuts can be duplicated rapidly on runs of identical parts. Time-consuming layout work is either eliminated or is confined to the first piece of the run.

The versatility of the DoALL Contour-matic machine, particularly its hydraulic table feed and automatic stop, plays a big part in the efficiency of production sawing. Data and suggestions on production sawing set-ups are available from your local DoALL Sales-Service Store or the DoALL Company.

## DoALL Precision Ground Tool and Die Steel Surface Finish Subject to Exacting Quality Control

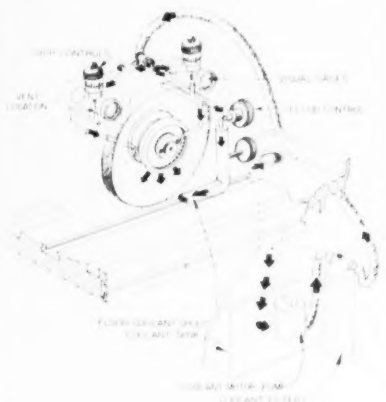
Because smoothness of surface finish is one of the big benefits of using precision ground flat stock for making dies, punches, tools and parts, DoALL has established exacting quality control procedures for assuring surface finish of 25 micro-inches or better. The illustrations show inspection of surface finish with a profilometer, an extremely sensitive instrument, capable of detecting variations of less than one micro-inch. This quality control inspection is made by scientific selection of sample pieces of finished, packaged steel. It serves as a double check on the inspection carried out at time of surface grinding and before packaging.

The chances of getting a piece of DoALL Ground Flat Stock not meeting the exacting surface finish tolerances specified are somewhere in the neighborhood of one million to one. Every piece is *guaranteed* to be within the tolerances specified or it will be replaced.

Tool steel literature and a size and price chart are available upon request.

## DoALL "Cool-Grinding*" Prevents Heat Damage, Permits Deeper Cuts

Cracks, annealing and warping often result from excessive heat generated by conventional surface grinders. Their elimination need not lie entirely in slower, lighter cuts. Maximum production is assured when "Cool-Grinding", available on DoALL Precision Surface Grinders, is used to reduce heat and eliminate damage by passing coolant *through* the wheel and out at point of contact with the cut. It makes heavy cuts possible without loss of finish or damage to the work pieces.



*U.S. Patent No. 2470350

Complete details on DoALL's combination "Cool-Grinding" and flood coolant attachment are contained in a new 20-page Surface Grinder Catalog, available upon request.

## *Did you know . . .*

. . . that every DoALL Sales-Service man goes to "school" regularly to learn the newest techniques in the use of the DoALL products he sells so that he can help his customers get the most out of them? He is continually kept up-to-date on new developments and improvements so that he can pass the information along? He is also backed by the prompt assistance of DoALL Factory Specialists and the DoALL Laboratories when a new or unusual technical "toughy" comes up in the field.

* * * *

. . . that DoALL sawing, surface grinding or gaging specialists are available to give educational talks, programs and demonstrations before plant groups, technical societies and vocational school students? That requests for such appearances can be made to local DoALL stores or to the DoALL Company?

* * * *

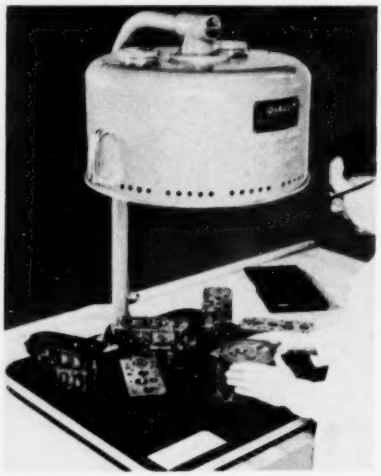
. . . that a $1,000,000 Central Warehouse inventory of cutting tools, gages and supplies backs the 38 local DoALL store stocks to give immediate shipment on almost any item?

———See Next Page———→

# Huge 20" Mercury Monolight Speeds Optical Inspection of Large Parts or Groups of Small Parts

With the new DoALL 20" diameter mercury vapor Monolight and suitable optical flats, large parts or groups of smaller parts can be checked accurately and easily to determine surface finish, flatness and dimensional accuracies within millionths of an inch. Work height capacity of the unit is 24" and the work table is 30" x 30". With large DoALL optical flats (up to 10" diameter standard) sizeable pieces can be inspected. Additionally, the head swivels through an arc of 160°, permitting inspection of parts on surface plates or tables adjacent to the Monolight.

Wide application for this large capacity light generator will be found in industries where lapped metal surfaces are being used more and more to provide tight metal-to-metal seals. The Monolight will be of real value to the automotive industry for checking lapped surfaces on hydraulic transmissions or in pumps and compressors. In the optical manufacturing industry the Monolight will find ready application in speeding up checking operations on curvatures of lenses.



Additional data and technical details on the new Monolight are available from DoALL Sales-Service Stores.

## DoALL "Cutting Tool" Catalog Contains Current Prices

To simplify purchasing of cutting tools, gages and industrial supplies the DoALL "Cutting Tool" Catalog contains not only complete product data, but current prices as well. Catalogs, when issued, are up to the minute. They are kept up to the minute by issuance of supplementary or superseding data and price bulletins to each Catalog owner. They are sturdy, high quality, three-ring loose leaf binders for seconds-quick, easy change. Prospective users may secure a copy by addressing local DoALL Sales-Service Store listed below.

# CALL DoALL Locally at these Sales-Service Stores in United States, Canada and Mexico

**ALABAMA**
Birmingham 4—800 N. 24th St.
*Call DoALL:* Birmingham 3-0502

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Los Angeles 21—1316-18 S. Santa Fe
*Call DoALL:* Trinity 3871
San Diego—(Customer Service)
*Call DoALL:* Main 8-2840
San Francisco 3—952 Howard St.
*Call DoALL:* Garfield 1-4784

**COLORADO**
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*Call DoALL:* Alpine 7444

**CONNECTICUT**
West Hartford 10—607 New Park
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Houston 2—121 St. Emanuel
*Call DoALL:* Capital 6588

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Vol. 2—No. 3—64M—4-53

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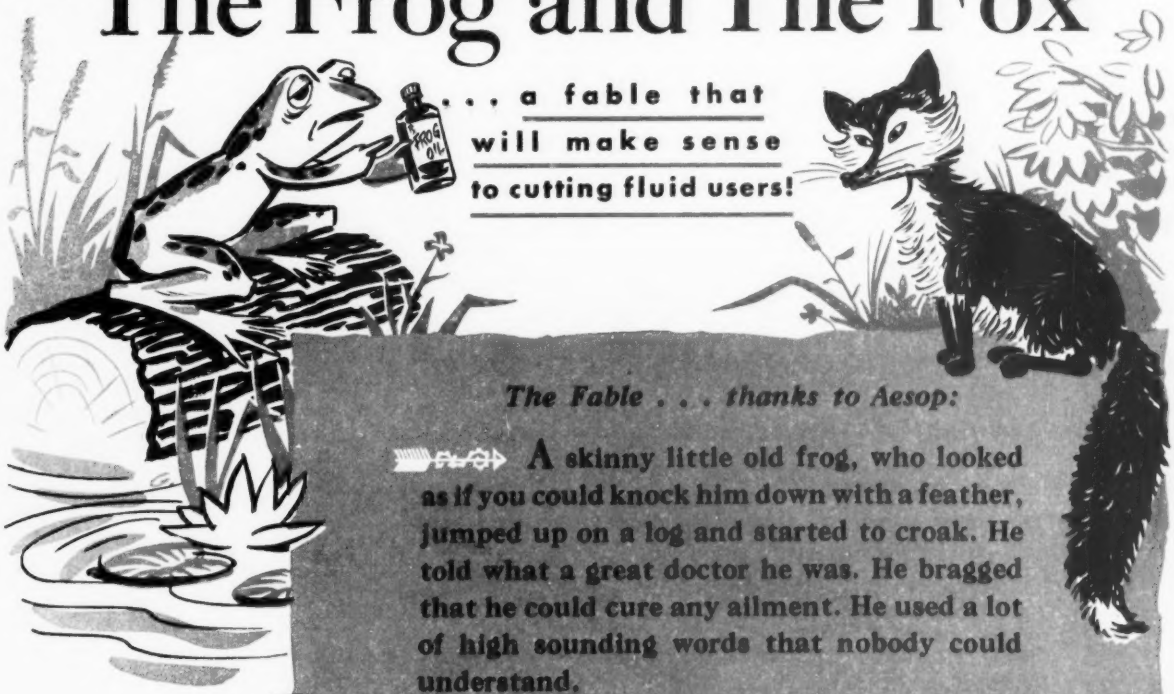
# "The Frog and The Fox"

**. . . a fable that will make sense to cutting fluid users!**




***The Fable . . . thanks to Aesop:***

**A skinny little old frog, who looked as if you could knock him down with a feather, jumped up on a log and started to croak. He told what a great doctor he was. He bragged that he could cure any ailment. He used a lot of high sounding words that nobody could understand.**

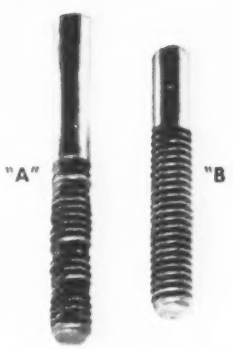
**Finally, the Fox, who was pretty sly himself, said, "Frog, you pale, liver-spotted little weakling, you can't even cure yourself. Just saying you are a great doctor doesn't make it so!"**

## *The Sense the Fable Makes:*

You are often told that there are miracle-working cutting fluids that will cure all your problems in machining everything from brass to stainless. They often turn out to be like the phoney frog in the fable. Here is an example:

A Stuart Oil customer was using Stuart's SpeedKut B Cutting Oil on his Brown & Sharpe automatics for threading SAE 1020 material. He was induced to try a "do-everything" product on the job. Picture A shows what happened! Picture B shows the same job machined with Stuart's SpeedKut. The "frog oil" didn't have enough cutting value.

Ask to have a Stuart Representative show you how the correct cutting fluid for the job, correctly applied, can save you time, money and material. Use the handy coupon below.




with "frog oil" | with Stuart's SpeedKut B

**More Than a "Coolant" is Needed**

**D.A. Stuart Oil co.**
EST. 1865 LIMITED

*TIME-TESTED CUTTING FLUIDS AND LUBRICANTS*

**2735-37 S. Troy St., Chicago 23, Ill.**

**CLIP TO YOUR COMPANY LETTERHEAD AND MAIL**

to D. A. Stuart Oil Co., Ltd., 2735-37 S. Troy St., Chicago 23, Ill.

Please ☐ Have Stuart Representative call

Check ☐ Send Booklet "Cutting Fluid Facts"

Your Name .....

Title .....

Eagle Music Wire
—for Dependable Springs—
Nowhere is there a better example of Washburn care and precision than in Eagle MUSIC WIRE. Our own basic steel—close tolerances and care in handling, all make for superlative quality.

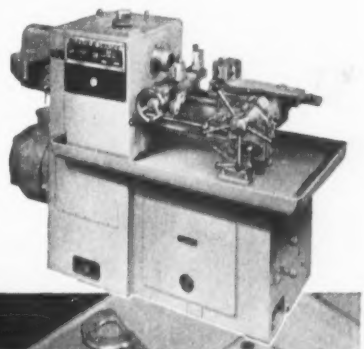
**WASHBURN WIRE CO.,** New York City

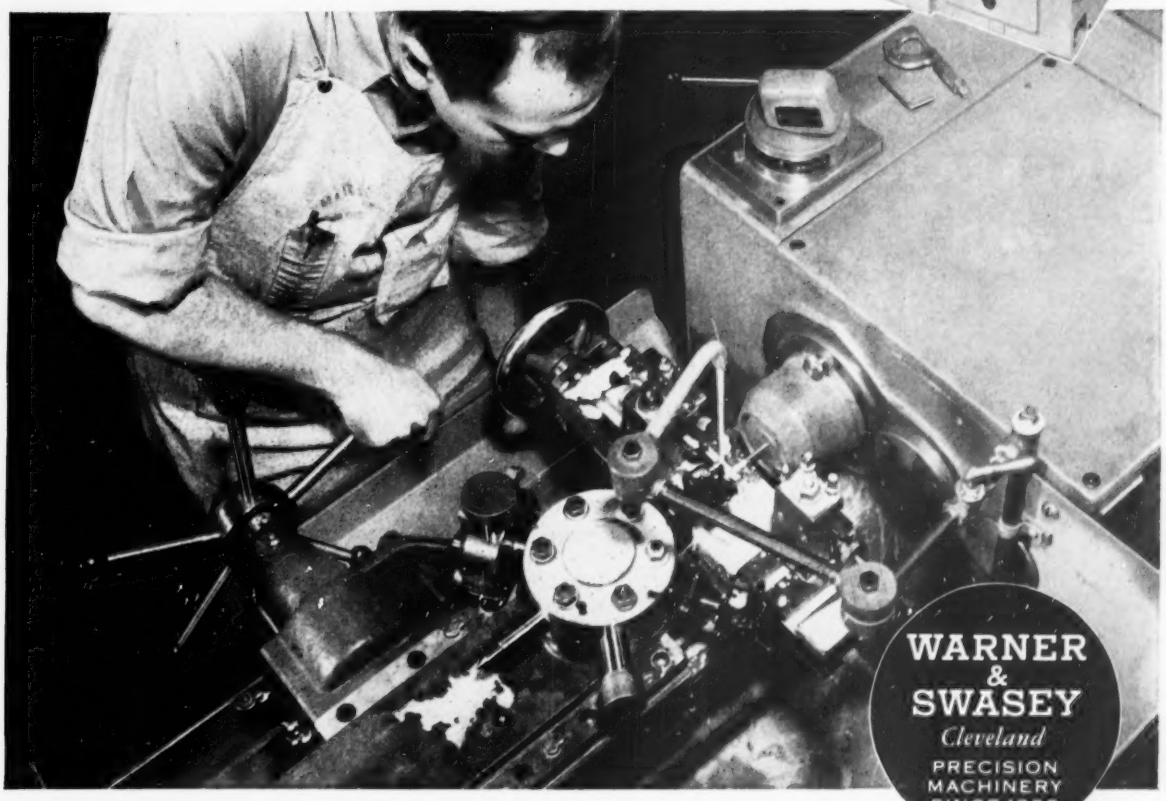
# NOW! a small capacity turret lathe that turns stainless and alloy steels more accurately than ever before!

Now, for the first time, all the versatility of a larger turret lathe has been incorporated in a No. 1 model— the Warner & Swasey No. 1 Electro-Cycle. It is easy to operate and control, designed to meet the high speed requirements of many small diameter bar jobs— to provide plenty of cutting torque at low speeds even for turning and threading hard steels.

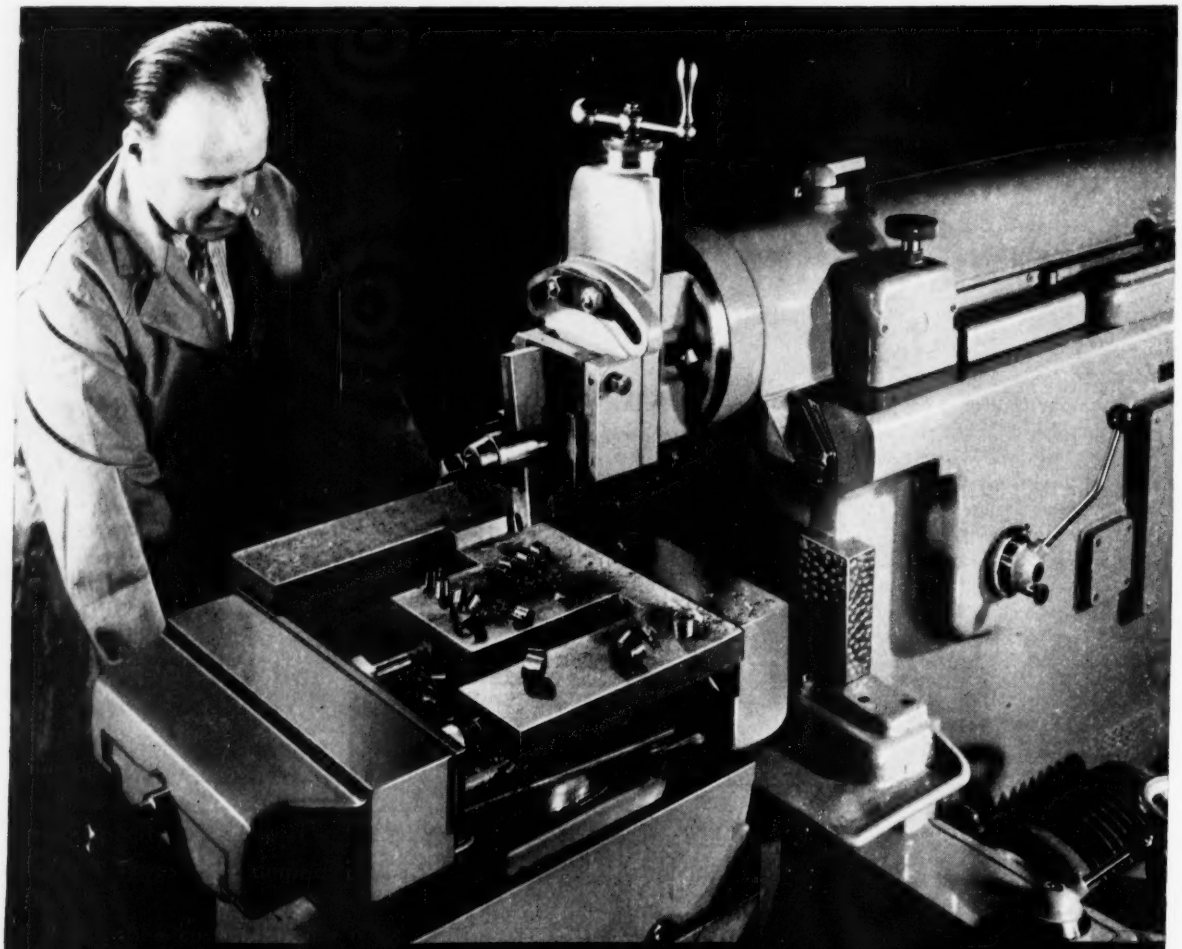
Also for the first time, the new No. 1 E-C gives you power feed to turret, a decided advantage in turning high precision jobs involving stainless or alloy steels. This feature, combined with the 1 E-C's wide range of spindle speeds, enables you to make the most efficient use of tools – providing better, more uniform finishes whether you're turning plastics, brass or hard steels.

And like all Warner & Swasey Machine Tools, the No. 1 E-C is ruggedly built to provide the rigidity necessary for lasting accuracy. You'll find it a profit builder on your small bar jobs, in a wide range of lot sizes. So call in your nearest Warner & Swasey Field Representative for all the facts!






YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY



# INCREASE YOUR OPERATING EFFICIENCY...
## with ROCKFORD HYDRAULIC SHAPERS

Hydraulic drive permits you to change stroke lengths instantly, even while the shaper ram is in motion. It also gives you a wide range of cutting speeds and feeds, infinitely adjustable.

With flame-hardened and ground ram ways, Rockford Shapers assure long life and constant accuracy for maximum operating efficiency.

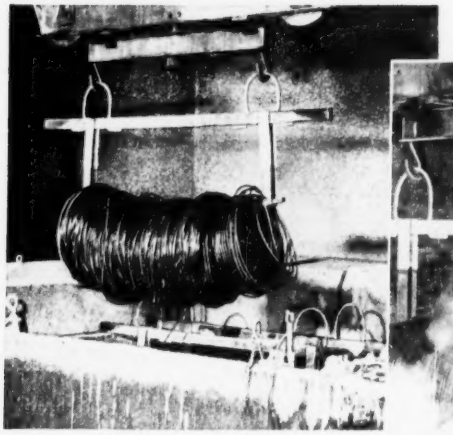
Ask a Rockford Machine Tool Co. representative to show you how you can increase your operating efficiency with Rockford Hydraulic Shapers.

528

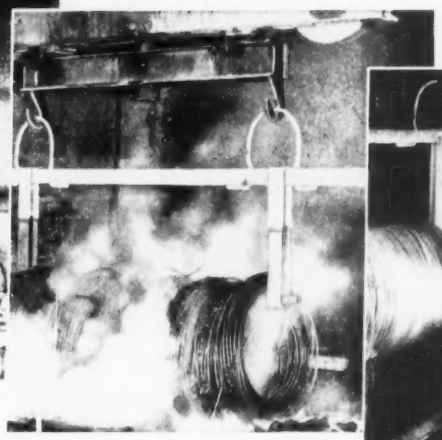
Hy-Draulic

ROCKFORD MACHINE TOOL CO.
2500 Kishwaukee Street • Rockford, Illinois

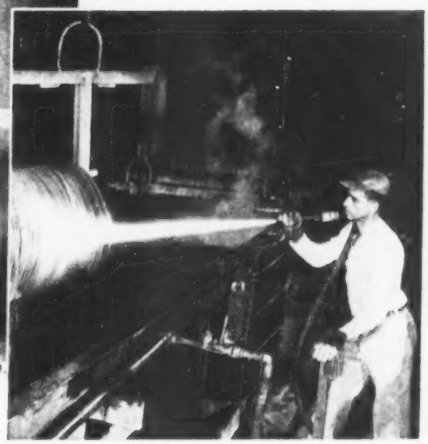
# Over 5 tons of carbon steel wire thoroughly descaled within one hour!



A yoke of 5 32" dia. wire is lifted from the hydride tank. (Up to 3 yokes can be treated at one time in this tank. Working dimensions are 7' x 8' x 5' 6".)



Water quench blasts off loosened scale.



Thorough descaling complete with final rinse.

# DU PONT SODIUM HYDRIDE DESCALING PROCESS

By switching to Du Pont's efficient and simplified process, a large eastern steel manufacturer was able to triple descaling capacity—with *less than half* the man power!

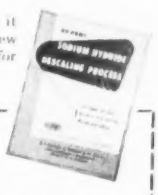
These and other important savings are possible with Sodium Hydride Descaling because elaborate scale breaking operations are eliminated entirely, yet uniform descaling is accomplished in the shortest possible time—no retreatments needed! And because dissimilar metals can be effectively treated in the same bath, this steel mill finds the Du Pont process ideal for descaling their quality carbon and stainless steel products indiscriminately at production line speeds.

Costly rejects due to pitting or loss of gauge are avoided . . . there's never any danger of base metal attack no matter how long the work remains in the sodium hydride bath! Dimensional accuracy is maintained, and subsequent drawing operations can be carried out to closer tolerances. Die life, too, is increased.

Find out how Du Pont's Sodium Hydride Process can improve your descaling operations. Just get in touch with our nearest district office or send in the coupon below.

**DISTRICT AND SALES OFFICES:** Baltimore • Boston • Charlotte • Chicago Cincinnati • Cleveland • Detroit • Kansas City* • Los Angeles • New York Philadelphia • Pittsburgh • San Francisco. *Burrell & Page, Inc.

***More detailed information*** about the process—how it works, what it can do for you—can be found in our new book. Call our nearest office or use the coupon below for your copy.

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Electrochemicals Department S-525
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Please send me more information about the Du Pont Sodium Hydride Descaling Process, advantages, applications, equipment used. I am interested in descaling _____

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*Name* _____ *Position* _____

*Firm* _____

*Address* _____

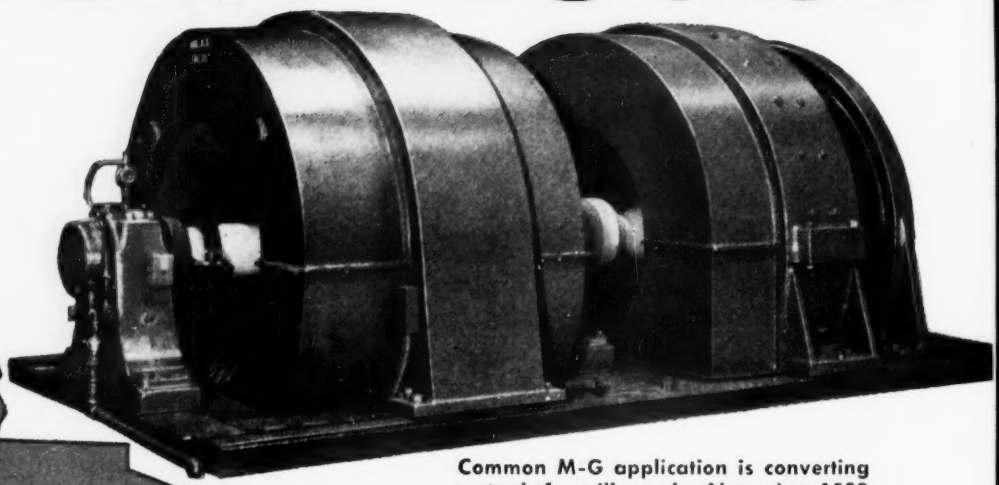
*City* _____ *State* _____

**DU PONT**
**Sodium hydride process for positive descaling**

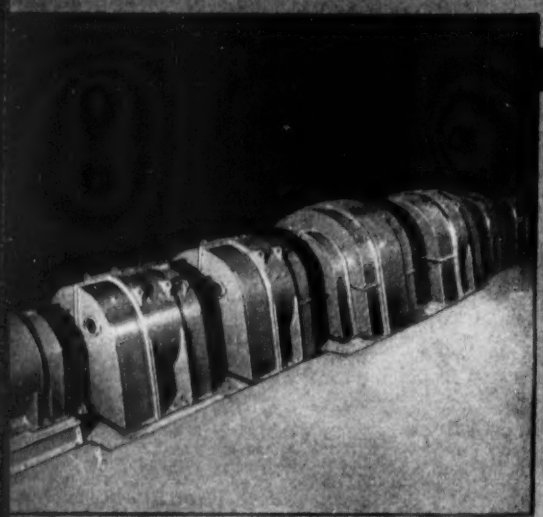
DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

# From Coast



Common M-G application is converting ac to dc for mill supply. Above is a 1500 kw synchronous set in eastern mill.



## WEST

This 8-machine 2000 kw M-G set supports a two stand, four high tin temper mill with generators opposite their mill motors.

## MIDWEST

A 56-inch, four stand tandem cold reduction mill is supported by this 7-machine 7750 kw synchronous motor-generator set.

## EAST

Three 3-machine 6000 kw synchronous M-G sets supporting six finishing stand motors in a large East Coast steel rolling mill.

## TEMPER MILL

Three midwestern single stand temper mills are supported by these M-G sets. Synchroneous motors of 1750 hp drive each set.

# to Coast!

## ALLIS-CHALMERS M-G SETS ARE WIDELY USED IN SUPPORT OF STEEL MILL DC DRIVES

**MAJOR STEEL PRODUCERS** from Coast to Coast use Allis-Chalmers motor-generator sets. This nationwide acceptance in heavy duty service is proof of their durability and quality.

These representative M-G sets indicate the wide variety in design and size available. Allis-Chalmers has long experience with steel mill needs — having built M-G sets for all current applications — and will build special for any new requirement that may arise.

*Motor-generator sets give you:*

1. Power factor correction.
2. Regenerative braking.
3. Quick starting for emergency demand.

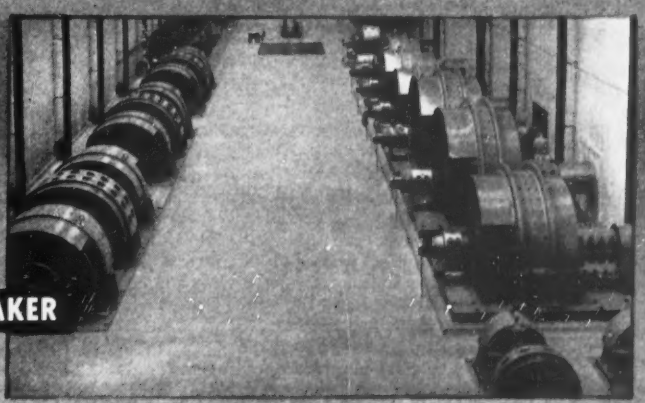
Only Allis-Chalmers gives you M-G sets with the exclusive *Frog-Leg* armature winding that ***eliminates injurious commutator sparking.*** *Frog-Leg* winding connects bars of equal potential through the winding itself . . . producing a perfectly equalized winding without the use of cross-connectors.

For full details on this heavy duty steel mill rotating equipment, ask for M-G Set Bulletin 05B6032A and Large DC Motor Bulletin 05B6002A. For your copies, just call the nearest A-C office or write direct to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3920

*Frog-Leg* is an Allis-Chalmers trademark.

**PICKLING LINE**

**A pickling line in an eastern steel mill is supported by this 4-machine 1375 kw, 720 rpm synchronous M-G set.**



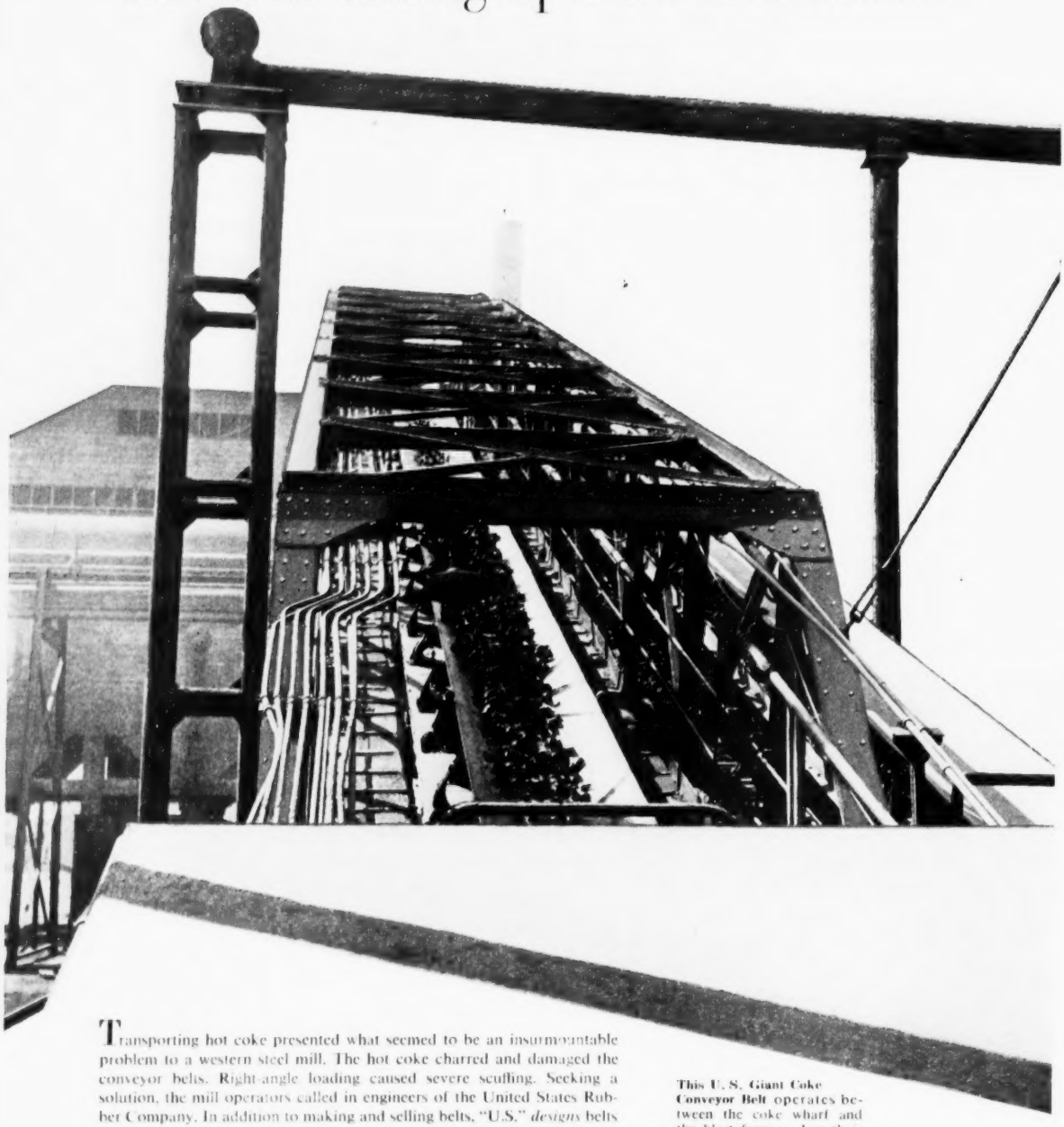
**RECORD BREAKER**

**A motor room, completely equipped by Allis-Chalmers, powered this 80-inch western hot strip mill to a new annual world tonnage record.**

# ALLIS-CHALMERS

**Power, Electrical, Processing Equipment for Iron and Steel**

# Hot coke coming up...via U. S. Rubber



Transporting hot coke presented what seemed to be an insurmountable problem to a western steel mill. The hot coke charred and damaged the conveyor belts. Right-angle loading caused severe scuffing. Seeking a solution, the mill operators called in engineers of the United States Rubber Company. In addition to making and selling belts, "U.S." *designs* belts that meet *precise specifications and unusual conditions*. In this case, the "U.S." engineers designed a special belt. It is performing so well that it will carry a record tonnage for this drive, saving many thousands of dollars in belt replacements.

This mill also uses many other "U.S." products—including industrial hose, pilot pipe, and packings. The entire installation is a good example of how "U.S." serves industry, and of how "U.S." *quality* products enable you to operate more *economically*. Our 25 District Sales Offices, each staffed with engineers, are at your service. Write to address below.

**This U. S. Giant Coke Conveyor Belt** operates between the coke wharf and the blast furnace. Length is 1170 feet.

**PRODUCTS OF**

**U.S.RUBBER**
SERVING THROUGH SCIENCE

*"U.S." Research perfects it*
*"U.S." Production builds it*
*U.S. Industry depends on it*

**UNITED STATES RUBBER COMPANY**

**MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.**

**Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Grinding Wheels • Packings • Tapes • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting**

WITH MACK-HEMP

# *Anniversary Rolls**

in the hot strip finishing train

1803 1953

- **M-H Anniversary Rolls ran in the first three finishing train stands during tests, for 8 hours—twice the time normally required between changes.**
- **Time between changes in final 3 finishing stands is increased, because M-H Anniversary Rolls present a better strip to these stands.**
- **M-H engineers point out that correct water application, both volume and pressure, is required for good service from this roll, or any roll.**

We want to call your attention to the remarkable job the new M-H Anniversary Roll is doing by increasing rolling time in strip mills. Our field tests show an increase of 50% and in some cases, more.

M-H's newly developed heat treatment is responsible for the unusual wearing qualities of the Anniversary Roll.

The economics of this roll are readily apparent in less downtime and increased production. We believe you can save money—in six figures annually—with the Anniversary Roll. Let us tell you about it.

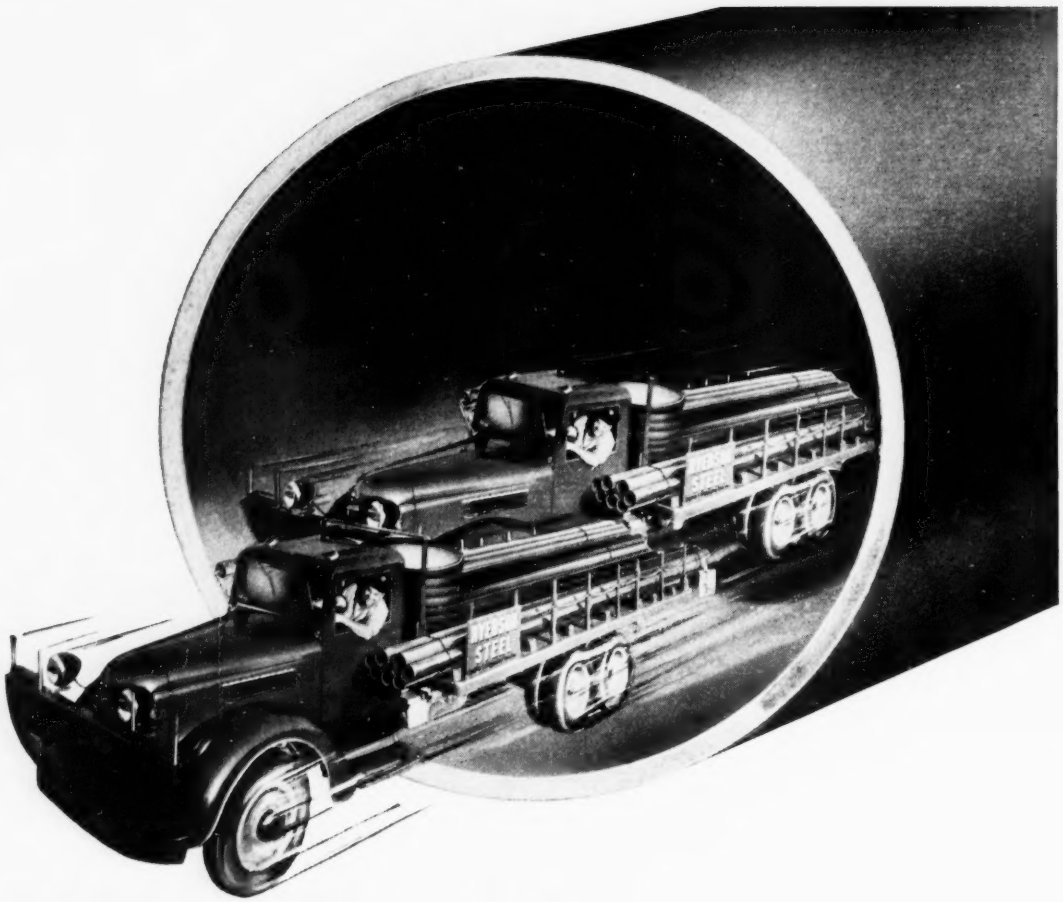
** Named in recognition of Mack-Hemp's 150 years of service to the metals industry — 1803 to 1953.*

**MACKINTOSH-HEMPHILL COMPANY**

*Makers of the Rolls with the Striped Red Wobblers*

PITTSBURGH and MIDLAND, PA.

**MACKINTOSH-HEMPHILL PRODUCTS INCLUDE:** rolls . . . steel and special alloy castings . . . completely integrated strip mills . . . heavy duty engine lathes . . . Mackintosh-Hemphill rotary straighteners . . . improved Johnston patented corrugated cinder pots and slag handling equipment . . . shape straighteners . . . end thrust bearings . . . shears . . . levellers



# Boiler Tubes . . . Fast

## . . . One Tube or a Truckload

Need boiler tubes in a hurry? Seamless or welded—any size—your nearby Ryerson plant can give you quick delivery of one tube or a truckload.

That's because Ryerson stocks are large and complete, and Ryerson facilities for fast handling, cutting, loading and dispatching permit around-the-clock service. When a boiler is down a call to Ryerson will help you get it back in service fast. When you need tubes for routine replacement or regular production you can depend on Ryerson deliveries to keep your work schedule.

And all boiler tubes from Ryerson meet our Certified Quality standards, conform to all code requirements and are made and tested in accordance with the latest ASTM and ASME specifications. So you'll find that Ryerson tubes are easy to install—safe and long-lasting in service.

Another reason for calling Ryerson: you'll save time by ordering boiler tubes with all your other steel-from-stock requirements from one convenient source. One call, one order, one invoice does the work of many. So get in touch with your nearby Ryerson plant for boiler tubes and everything in steel.

**These Products, Too**

- Bent Boiler Tubes
- Condenser & Heat Exchanger Tubes
- Copper Ferrules
- Tube Expanders
- Heads-Flanged, Dished, etc.
- Manhole Covers & Fittings
- Manhole Saddles, Welding Flanges
- Flange & Fire Box Plates
- And everything in carbon, alloy & stainless steel

# RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

STEEL

# The Metalworking Outlook

May 25, 1953

## Steel Wages: Food for Thought

United Steelworkers of America in the past ten days' recess of the steel wage talks have no doubt considered this fact: Pay settlements negotiated since the first of the year in metalworking average about 8 cents an hour. Steelworkers are coy about specific demands, but they'll finally ask for around 25 cents an hour and be glad to settle for about 12. U.S. Steel Corp. Chairman Ben Fairless last week in a Philadelphia speech made a plea for reason in labor negotiations by terming as "disastrous" the idea that to bargain collectively, labor and management must sit on opposite sides of a table and try to take something away from each other.

## Mr. Reuther Has Problems

CIO President Walter Reuther faces problems in his United Auto Workers. His chief opponent, Carl Stellato, has just been elected for another term as president of Ford Local 600, whose 51,000 members make it the biggest UAW local. In addition, the CIO and UAW president fears that the furious auto production pace will mean layoffs later. And he also fears that he's stuck with his long-term contracts. On May 14, a kind of test strike was called at General Motors Corp.'s Detroit Transmission Plant in an attempt to break the five-year agreement, but thus far it hasn't succeeded.

## More Union Members

Union membership drives are making some headway. Bureau of Labor Statistics estimates membership has grown at least 500,000 and possibly as much as 3 million since March, 1949. Between 16.5 million and 17 million workers now belong to unions, including 9.5 million to the AFL and 5 million to the CIO.

## Decontrol for Nickel?

NPA is considering a proposal that all nickel-bearing steels be decontrolled, except for military and atomic uses, by Oct. 1 and that nickel curbs, except for military and atomic uses, be removed next Jan. 1. The proposal might be accepted if plans now in the works to get more nickel for American consumers bear fruit.

## Press Program Not Abandoned

The Air Force heavy press program won't be completed as rapidly as expected, but it's not being abandoned. A major cause of the delay is development of a new press with greater flexibility that may be used instead of some of the other units.

## At Last, T-48 Medium Tanks

After a lot of hassle, the Patton T-48 medium tank is at last ready for production. Ford, Chrysler and Fisher Body will turn out the units for a while, but reports have it that Ford is being phased out of the

*Production-Engineering News—p. 115* *The Market Outlook—p. 203*

program sometime after the middle of the year. Cadillac in Cleveland makes a light tank and has no part in the T-48 medium.

### Aid for Distressed Areas

The administration definitely will use its authority to permit five-year tax amortization as a tool to bolster any areas where signs of recession develop. Any company wishing to expand in such an area, whether for defense or not, will have an easy time getting a certificate of necessity. Details are being worked out now. Even federal planners expect no miracles from the idea, but it should help.

### Pretesting Sales Presentations

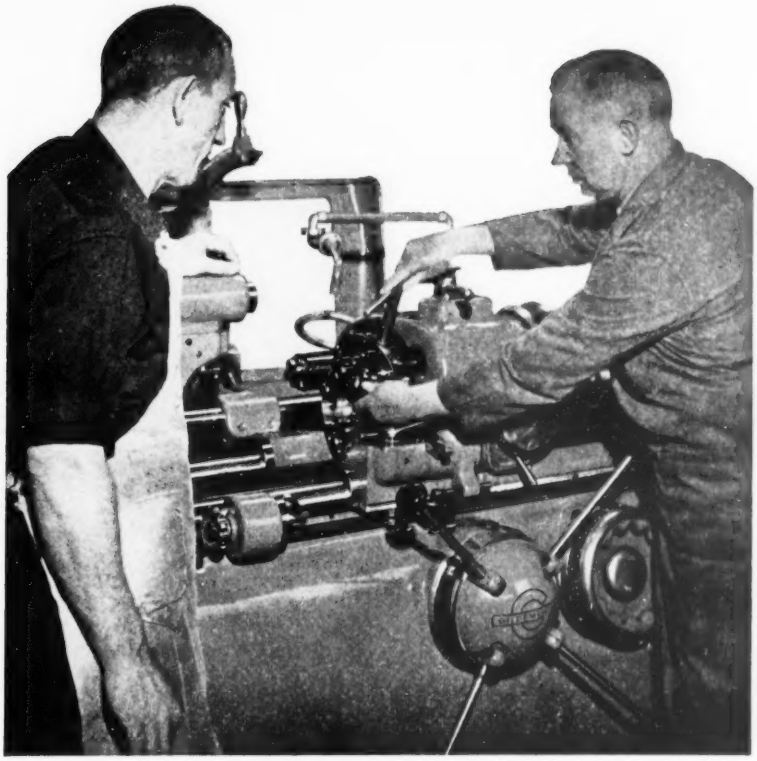
Are your sales presentations topnotch? Roger K. Becker, vice president of Ohio Valley Hardware & Roofing Co., Evansville, Ind., estimates that sales meetings cost his company $100 an hour. So, his company is thinking about auditioning manufacturers' sales presentations to see whether they are worth calling salesmen in to hear them.

### Straws in the Wind

The National Manpower Council declares that a shortage of first-rate research scientists, particularly physicists, is jeopardizing the nation's security . . . Expect few major styling and engineering changes in 1954 cars—broad changes are coming only every two or three years . . . A Swiss firm, Brown Boveri Corp., was awarded a $3,553,700 contract for heavy duty electrical equipment at the $1.2 billion atomic explosives plant being constructed in Pike county, O. . . . Howard Foundry Co., Chicago, took over management of Alumicast Corp., Chicago, a permanent mold foundry . . . McLouth Steel Corp. plans a $105 million expansion program including a blast furnace, ore docks, ingot making and steel rolling facilities at its Trenton, Mich., plant.

### What Industry Is Doing

Will you be ready for the shift on June 30 to the Defense Materials System from the Controlled Materials Plan? (p. 65) . . . The construction industry is hoping to complete about 1 million housing units in 1953 (p. 66) . . . Porcelain enamelers, dependent for the most part on orders from appliancemakers, are striving to open new markets (p. 67) . . . Producers of materials handling equipment are getting set for harder, sharper selling ahead (p. 68) . . . Specialized equipment for handling flat metal sheet is needed by wholesalers (p. 68) . . . Business may continue to pour into industrial furnacemakers through the first quarter of 1954 (p. 68) . . . Electro Metallurgical Co. is turning out a new ferrochrome alloy, Simplex ferrochrome, which should make it cheaper to produce stainless steels (p. 70) . . . There still will be plenty of chances for subcontracts, despite cuts in the defense budget (p. 71) . . . Are your purchasing methods up to date? Good materials procurement becomes increasingly important (pp. 105-111).



# What kind of Servicing can you expect when you buy German Machine Tools?

**MEET A TYPICAL ORBAN SERVICE ENGINEER AT WORK** right in a customer's plant, setting up a Gildemeister Turret Lathe at Special Screw Products, Inc., Bedford, Ohio, and instructing operators in its use. Or it might be a Lindner Jig Borer at Ford—a Cawi Grinder at Thompson Products—a Klopp Shaper at Textile Machine Works.

He's typical of a staff of factory technicians permanently stationed at Orban—men who have actually built the machines they install, demonstrate and service.

**Three Service Centers**

These engineers work out of our service centers in Cleveland, Detroit and Newark, N. J., where replacement parts are stocked for all normal maintenance needs. Where a special part or attachment is needed in a hurry, our direct teletype connection with our Dusseldorf, Germany office can speed it on its way within 24 to 48 hours.

Actually, though, we've found that the hundreds of machines we've installed in major plants from coast-to-coast have needed little or no service attention after installation. In fact, our engineers have been able to devote some of their time and skill to servicing foreign tools purchased elsewhere.

**Tools built to American standards**

One thing more: Every machine tool we distribute is designed for standard American voltages and frequencies; calibrations and lead screws are in inches. Our written guarantee of materials and workmanship for a period of six months accompanies each machine. Complete operating instructions in English are supplied.

That's what you can count on when you buy machine tools from Orban. Ask us about your requirements.

**Send for current stock list**

| | |
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| Lathes | Grinders |
| Milling Machines | Drill Pointers |
| Jig Borers | Power Hack Saws |
| Thread Grinders | Screw Machines |
| Drill Presses | Die Sinkers |
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KO CO., INC. INDUSTRIAL IMPORTERS

# KURT ORBAN COMPANY, INC.

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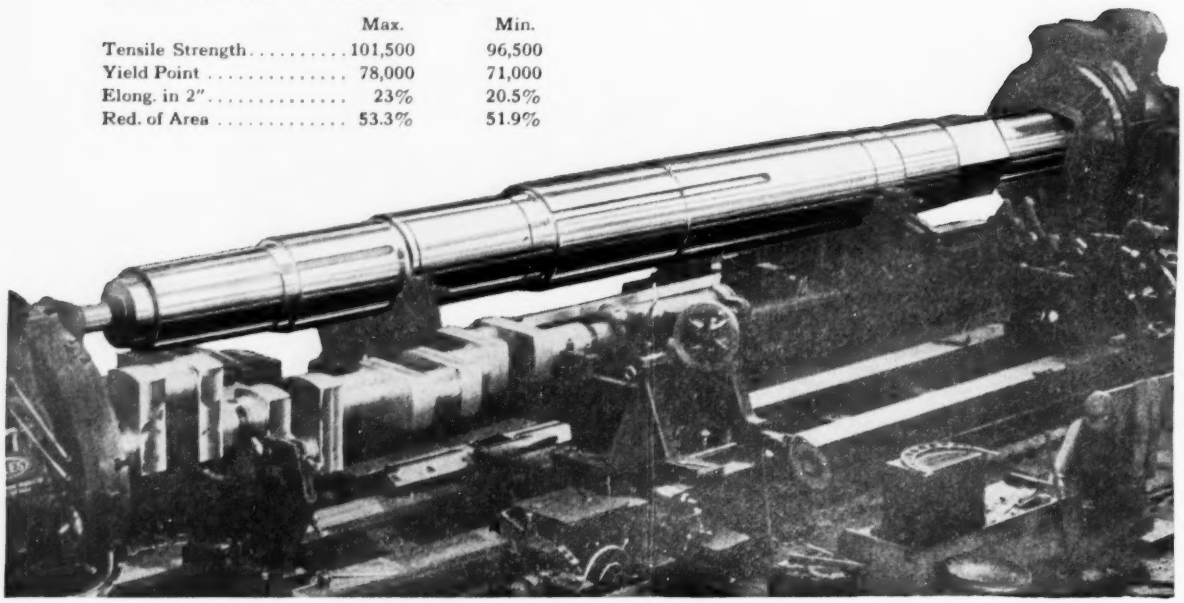
1939 Santa Fe Ave., Los Angeles • Canadian sales by European Machinery Ltd., 11 King St. West, Toronto, Can.

**NICKEL STEEL FORGING** . . . a 58,950 lb. hoist drum shaft, 24" in diameter at its widest portion and 42' 9" long, produced by ERIE FORGE & STEEL CORP. Inspection revealed very fine grain. After being normalized and drawn, actual tensile tests in the longitudinal direction showed the following:

| | Max. | Min. |
|---|---|---|
| Tensile Strength | 101,500 | 96,500 |
| Yield Point | 78,000 | 71,000 |
| Elong. in 2" | 23% | 20.5% |
| Red. of Area | 53.3% | 51.9% |



# How Erie Forge Obtains

# Superior Properties in Large Forgings

To develop high tensile and elastic properties in large forgings, such as this giant shaft, by heat treatment is much more difficult than with smaller forgings.

For even though dimensions of a large piece may allow liquid quenching, section sizes involved ordinarily limit the cooling rates.

*Experience shows that superior mechanical properties in large forgings depend largely on suitable alloy content . . .*

Fundamentally, that is why the output of ERIE FORGE & STEEL CORPORATION of Erie, Pennsylvania, includes scores of large forgings produced from nickel alloyed steel.

Nickel, either alone or in combination with other alloying elements, exerts highly beneficial influences. Its strengthening effect on ferrite is independent of carbon content or heat treatment of the steel, while its effectiveness in reducing the rate and temperature of the upper transformation, induces better response to the necessarily milder heat treatments used.

Nickel alloy steels may help you obtain peak performance from vital parts of *your* products or equipment. Send us the details of your problems for our suggestions. Write us now.

At the present time, nickel is available for end uses in defense and defense supporting industries. The remainder of the supply is available for some civilian applications and governmental stockpiling.

EMBLEM OF INCO SERVICE

**THE INTERNATIONAL NICKEL COMPANY, INC.** 67 WALL STREET NEW YORK 5, N. Y.

# Bitter Medicine

There is bound to be a lot of controversy over President Eisenhower's frank discussion of defense obligations, balancing of the budget and taxes. His four-point program is not popular, according to orthodox political leaders.

That program consists of extending the excess profits tax from June 30 to Dec. 31, producing $800 million in revenue; repealing the 5 per cent reduction in regular income tax due Apr. 1, 1954, and thus bringing in an income of about $2 billion annually; postponing the reductions of excise taxes due next Apr. 1 until new proposals can be submitted next January; and postponing the increase in old age security from 1.5 to 2 per cent on employees and employers, scheduled to go into effect Jan. 1, 1954. The slight reduction in personal income taxes, already provided for in existing law, will go into effect next Jan. 1.

Before proposing these tax measures, the President described in detail the financial mess inherited from the previous administration. First, tax collections were overestimated by $1.2 billion. Secondly, the Truman administration made no specific budgeting provisions for the continuance of the Korean war. Thirdly, the nation has hanging over it an obligation of $81 billion which is like a C.O.D. shipment of tulip bulbs or mail-order house window screens. You pay when the stuff is delivered.

Faced with this terrific financial situation, the new administration has demanded reductions in the budget for every department and agency. In the brief period of less than four months it has been able to pare $8½ billion from the Truman administration's budget. This alone means the reduction of $50 in the obligation of every man, woman and child in the nation.

Industry, of course, does not relish extension of the excess profits tax, nor does it like the postponement of other tax reductions. It believes that a tax policy that provides certain incentives for volume and efficiency in production would be more beneficial to the nation and to individuals and companies than the present senseless conglomeration of corporate taxes.

Fortunately, the ultimate objective of the Eisenhower policy, as outlined last week, does not run counter to this philosophy.

E. C. Shaner

EDITOR-IN-CHIEF

**WHAT, NO FIRE ALARM!:** In his message on defense, budget and taxes, President Eisenhower used the term "fire alarm emergencies" in a highly appropriate manner. He said that our national defense must be one which "we can bear for a long and indefinite period. It cannot consist of sudden, blind responses to a series of fire alarm emergencies,

summoning us to amass forces and materials with a speed that is heedless of cost, order or efficiency."

In truth, much of our federal government activity in recent years has consisted of "sudden, blind responses to fire alarm emergencies." This was particularly true of labor disputes. Every time discord was threatened, somebody turned in a fire alarm and all the mediation forces of government came running. Usually the fire was put out, but "heedless of cost, order or efficiency"—or justice.

Over two months ago CIO and AFL workers walked out of the jet engine plant of General Electric Co. at Evendale, suburb of Cincinnati. Nobody turned in a fire alarm. No fire engines from the White House or from Washington bureaucracy responded. A back-to-work movement started, grew, and the strike ended.

* * *

**SHORT OF BRAIN POWER:** For months, metalworking companies have been interviewing seniors at universities with the idea of hiring them when they graduate in June. The demand far exceeds the supply. There are jobs for at least 25,000 more engineers than will graduate from the 1953 classes.

The National Manpower Council, headed by James D. Zellerbach, president of Crown-Zellerbach Corp., has submitted to President Eisenhower its report entitled "A Policy for Scientific and Professional Manpower." It concludes that the nation is wasting its brainpower. Not enough men and women mentally capable of work in the sciences and professions are being trained. Worse yet, not enough of those who are being trained are going into jobs where their special talents can be utilized properly.

In the "jetomic" age into which we are entering, we will need more skilled brainpower than ever before. Industry should consider the development of an adequate supply of scientific and professional personnel even more important than the development of physical resources.

* * *

**ARROGANCE OR HUMILITY:** Recently the famous architect, Frank Lloyd Wright, was interviewed on television. The interviewer was asking questions that would evoke answers which would indicate the wide range of Mr. Wright's many and important contributions to architecture. From these answers, the TV audience learned quickly that Mr. Wright has an abundance of original ideas, is confident they are sound and is proud of his achievements.

To those who may have felt that Mr. Wright thinks pretty well of himself, he offered an explanation that is worth careful consideration. He said that at an early stage in his professional career when he had to make a choice between "honest arrogance and hypocritical humility," he chose the former. One wonders how many other great men have realized that there was a choice to be made between these attitudes.

* * *

**CHEAP FUEL IS MAGNET:** A press tour conducted early last week through the new ferroalloy development of the Electro Metallurgical Co., division of Union Carbide & Carbon Corp., at Marietta, O., served to renew emphasis upon the rapid growth of electrochemical and electrometallurgical activity that is taking place along both sides of the Ohio river. From Pittsburgh to Cairo, in Pennsylvania, Ohio, West Virginia, Kentucky, Indiana and Illinois, new plants involving the expenditure of hundreds of millions of dollars have been completed recently or are under construction.

In the case of Electromet, the magnet of the Marietta location was abundant low-cost coal, adequate water supply and an excellent labor market. To these came manganese, chrome and other ores from all over the world for reduction into ferroalloys.

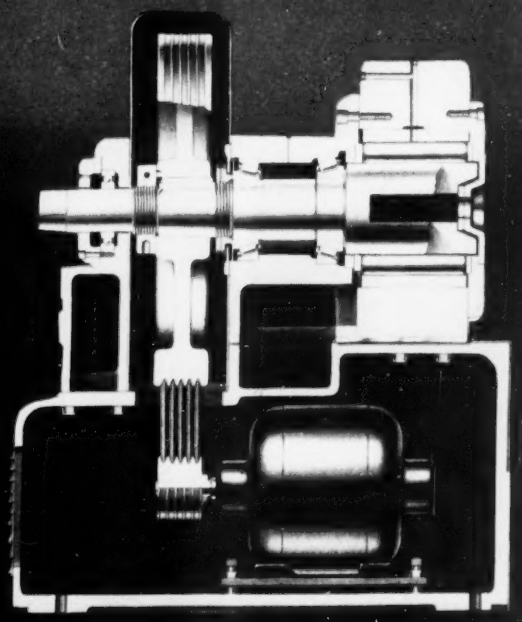
* * *

**HOW TO CLEAR THE AIR:** The White House has announced that President Eisenhower will make a report to the nation by television on Wednesday evening, June 3. Also, it is hinted that the President may adopt a policy of talking to the people more frequently to explain his views on government problems of current interest.

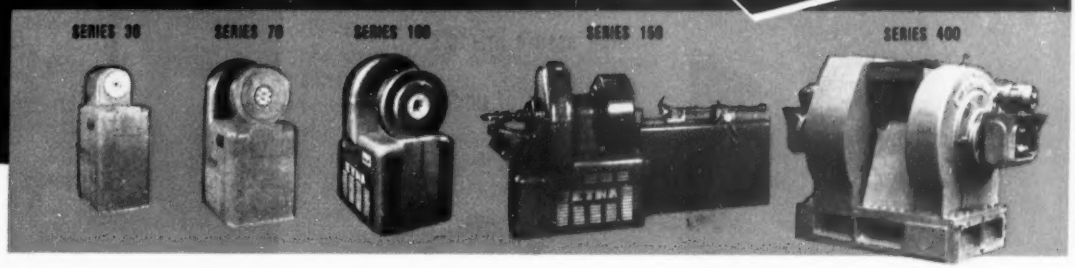
Many persons will applaud this idea. Recently there has been too much talking by too many persons. The result has been confusion as to what course the Eisenhower administration really is pursuing. Certainly, last Tuesday's talk on taxes by the President eliminated completely confusion as to the administration's policy on that subject. Occasional statements of policy on other important matters by the President will help clear the air at home and abroad.

# IF IT'S SWAGING... It's Etna..

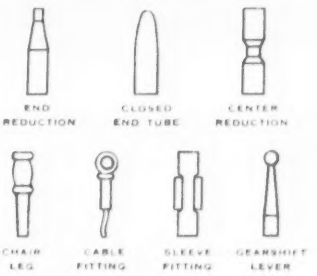
FOR CONTINUOUS PRECISION PRODUCTION!



A COMPLETE RANGE OF SIZES AND CAPACITIES



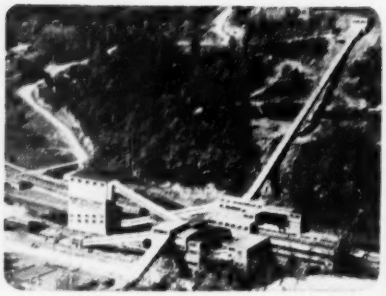

For tapering, sizing, reducing and forming to special shapes of round solids and steel tubing, the Etna Swaging Machine offers the ultimate in modern machine design. Regardless of size and description of the job to be done, there's an Etna swager right for *greater production*. Write today regarding your specific job problems.

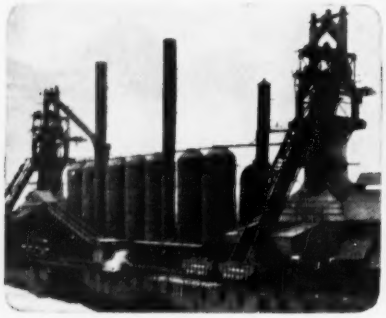


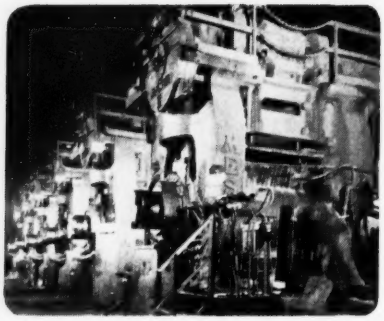

**It's New! Get full information on removal of I. D. Bead on steel and stainless steel tube with Etna Swagers resulting in mirror finish. Bead also removed on conduit.**

## Abbey ETNA Company

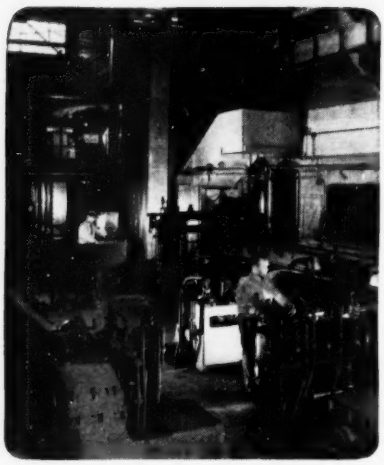
**3402 MAPLEWOOD AVE., TOLEDO 10, OHIO**





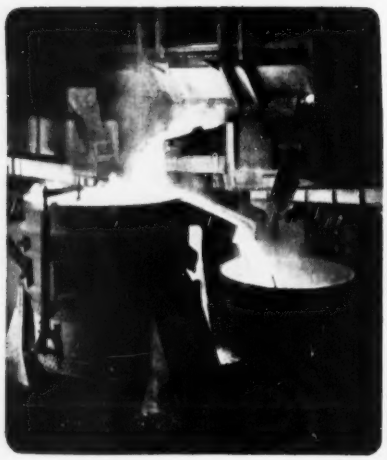


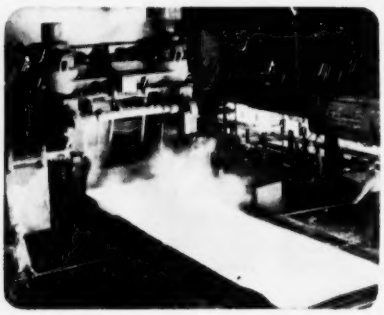
Here you see some of the integrated facilities that assure Inland's customers of uniformly high quality steel.

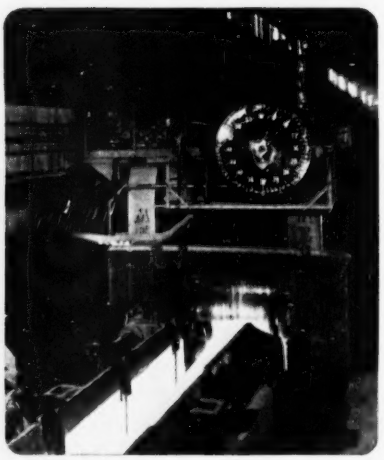


**INLAND STEEL COMPANY**
38 South Dearborn Street
Chicago 3, Illinois

**Sales Offices:**
Chicago, Milwaukee, St. Paul, Davenport, Kansas City, St. Louis, Indianapolis, Detroit, New York







# DMS

## Defense Materials System

## *Are you ready for the change?*

ARE YOU READY for a shift from CMP to DMS?

Action in Congress last week indicates that no legislative tangle will snarl the legal change from the controlled materials plan to a defense materials system, a shift which is due by midnight June 30.

**The $64 Question**—The real question is: Will you be set for the shift? "There are indications," warns one steel marketing expert, "that many consumers won't be ready psychologically. Some may be like the sea gulls down on the Gulf of Mexico which had picked up the habit of feeding on the refuse thrown out by shrimp fishermen. When the fishermen left, sea gulls starved to death because they had forgotten how to forage for their own food."

Steel, copper and aluminum consumers with Department of Defense or Atomic Energy Commission business will, paradoxically, be in the best psychological shape after June 30 because for them DMS will be virtually the same as CMP (STEEL, Mar. 30, p. 49, and Mar. 16, p. 67). They'll have much the same program identification symbols and numbers, although only about half as many as under CMP (see the accompanying list). The same directive system to set aside rolling capacity on mills will exist under DMS as under CMP. Even many orders spelling out how DMS should work will be identified in the same way as the old parallel CMP order except that the letter "A" will be added to the DMS rules.

**Alone** — But the surroundings won't be so familiar to companies with no defense or atomics work who won't be eligible for DMS aid after June 30. A Philadelphia industrialist who has gone through the control and decontrol cycle before says, "A vacuum exists for a while after controls are gone when you can get yourself into a lot of trouble if you aren't careful."

He and other experienced executives give this advice on how to stay out of trouble after June 30: Plan your course under decontrol just as carefully as you prepared for controls; study the DMS setup even if you don't think it applies to you because you may still be subject to a few rules without your realizing it; cultivate your suppliers; try to line up some new suppliers, just in case; be sure your purchasing department is primed for new conditions.

**Affected** — Many metalworking companies will still be involved in DMS because for the third quarter an estimated 30 per cent of aluminum, 22 to 25 per cent of copper and 15 per cent of steel production will be controlled. The basic orders for the metals are out—M-5A for aluminum and M-11A for copper issued May 6 and M-1A for steel issued May 14 (for details on M-1A, see p. 71).

## DMS Symbols:

### DEFENSE DEPARTMENT

A-1 Aircraft
A-2 Guided missiles
A-3 Ships
A-4 Tank-automotive
A-5 Weapons
A-6 Ammunition
A-7 Electronic and communications equipment
A-8 Fuel and lubricants
A-9 Clothing & equippage

B-1 Building supplies and equipment for constr.—troops
B-2 Subsistence
B-3 Transportation equipment
B-5 Products for customers engaged in A through E programs (self-assigned by producer)
B-7 Certain stockpile requisitions
B-8 Production equipment (certain private contractors)
B-9 Production equipment

C-2 Construction
C-3 MRO
C-4 Certain munitions items being purchased by foreign govt's. through domestic commercial channels
C-5 Canadian military production program
C-6 Direct defense needs for foreign governments other than Canada
C-7 Utilities, construction and repair, Corps of Engineers
C-8 Navy controlled material warehouses
C-9 Miscellaneous

### NAT'L PRODUCTION AUTHORITY

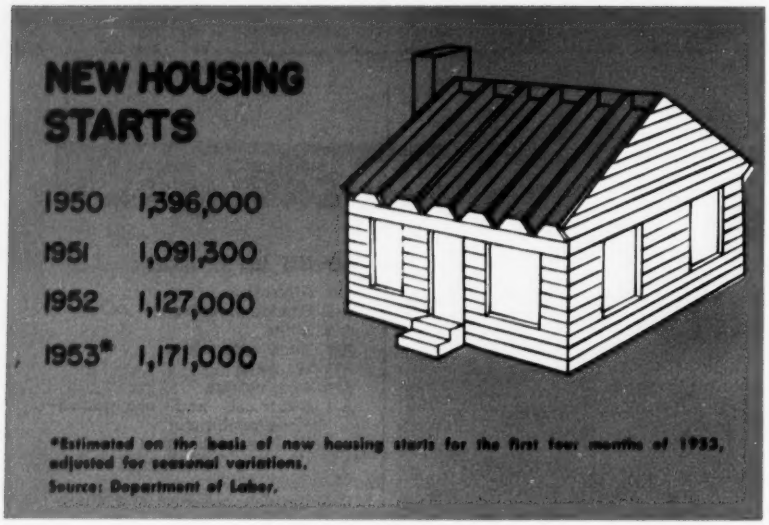
D-3 Further converters (steel)
D-4 Domestic production only
D-5 Domestic construction only
D-6 Canadian programs
D-7 All foreign programs (except Canada)
D-8 Distributors, warehouses and miscellaneous
D-9 MRO

### ATOMIC ENERGY COMMISSION

E-1 Construction
E-2 Operations (including MRO)
E-3 Privately-owned facilities
E-4 Canadian atomic energy program
E-5 Electric utilities supporting AEC programs

### NPA SPECIAL

SS Stainless steel for nondefense uses (third quarter, 1953, only)
AM Aluminum controlled material producers to obtain aluminum production materials
AM-9000 Aluminum distributors
AF Aluminum foil fabricators
AP Aluminum powder fabricators


NEW HOUSING STARTS
1950 1,396,000
1951 1,091,300
1952 1,127,000
1953* 1,171,000
*Estimated on the basis of new housing starts for the first four months of 1953, adjusted for seasonal variations.
Source: Department of Labor.

# Housing Goal: 1 Million Starts in 1953

SAWS AND HAMMERS flew with tremendous speed early this year, with nonfarm dwelling units built at a seasonally adjusted annual rate of 1,174,000 units in April.

Taxes, large down payments and higher interest rates may hold construction totals below what they could be this year. A study made by F. W. Dodge Corp., New York, indicated that residential construction may drop 11 per cent from 1952 totals by year end. Economists polled by Dodge estimate that new nonfarm housing units will decline to 1,020,000 in 1953. Last year 1,127,000 dwelling units were started.

**Good Start**—Joint estimates of the Commerce and Labor departments show that $2945 million in new private residential construction was begun in the first four months of 1953, compared with $2710 million in 1952. Part of this increase is due to higher costs.

Public residential building dropped from $230 million in the first four months of 1952 to an estimated $184 million in the same period this year.

**Economy** — Low-cost housing leads the field in this year's surge of construction. "Houses selling the best cost from $10,000 to $13,000," says L. L. Morman, secretary-treasurer of Alcor Building & Development Co., Pittsburgh.

"In housing, people are not as free to build as they were two or three years ago—they prefer to spend between $12,000 and $15,000," remarks Anthony R. Scotti, engineer and estimator for V. Scotti & Sons, Pittsburgh.

**Initial Costs**—Many economy-minded buyers are being discouraged by high down payment requirements, says a Detroit builder. The National Association of Home Builders reports that three of every five nonveteran families who tried to purchase new homes on government-insured mortgages during the past six months were unable to buy because of such requirements. In most cases family incomes were adequate to cover monthly charges.

The increase in the interest rate on GI loans guaranteed by the Veterans Administration from 4 per cent to 4.5 per cent also lowers incentive to buy homes. VA's action coincided with an increase to 4.5 per cent in the interest rate on Federal Housing Administration-insured home mortgages.

**Easily Available**—The National Association of Home Builders believes raising the interest rate will make mortgage capital easier to obtain. Lenders had found greater profit in other fields of investment, NAHB says. The VA predicts that as interest rates climb, lenders will require smaller down payments and will draw up more contracts on 25-year or 30-year terms.

Demands for more attractive low-cost housing are answered by U. S. Steel Corp.'s housing subsidiary, Gunnison Homes Inc., New Albany, Ind., which introduced a regional model house—the Westerner. This unit, to cost about $9300, is designed to meet typical requirements of Southwestern climate and architecture.

The importance of residential construction to the steel industry is shown by the American Iron & Steel Institute estimate that 2669 pounds of steel are required in a modern kitchen—and nearly 6200 pounds of steel in the rest of a present-day six room house.

**New Developments**—"More research is needed in housing," reports William H. Scheick, executive director, Building Research Advisory Board, Washington. He suggests research aimed at selling the entire house, rather than simply improving building materials and mechanical equipment.

Striving to reach a minimum of 1 million housing starts in 1953, builders optimistically point to ample supplies of steel, copper and aluminum. Plumbing supply inventories are ample, as are nails. Although the housing boom seems to have died down, the natural growth of the American population and the vast potential market for home ownership should guarantee that no recession is in store for housing.

## Magnaflux Moves to New Plant

Magnaflux Corp., Chicago, who has been developing nondestructive testing of metals and other materials for nearly 25 years, is now in its fourth home since moving to Chicago in 1936. The new plant and main office at 7300 W. Lawrence Avenue has 74,000 square feet of space, compared with the 41,000 square feet in the old plant.

Magnaflux began in 1929 as an idea of Alfred V. de Forest, who developed it along with F. B. Doane. Mr. Doane is the surviving member of the partnership and present president of the company. Each time it has moved in Chicago, the firm has nearly doubled its floor space.

The present plant devotes about 65 per cent of the space to manufacturing and the balance to research, engineering and field engineering service functions.

Indicative of new markets for enamelers, a combination turbo-supercharger cooling cap and exhaust hood is sprayed with a ceramic coating. This is a low-pressure operation whereas ordinary porcelain enameling is high-pressure work

Bettinger Corp.

# Porcelain Enamelers Develop New Markets

**Porcelain enamel's lazy qualities are being put to work as enamelers try to rely less on appliance business for their livelihood**

NEW MARKETS represent the prime objective of the porcelain enamel industry. Dependent till now on orders from appliancemakers to a great extent, porcelain enamlers hope to open new fields by capitalizing on PE's inherent characteristics to broaden the base of the industry.

The list of applications being developed is long and impressive. Not all are innovations.

**What's New**—Ceramic coatings are being used increasingly where heat resistance is a big factor. Jet engine parts are being produced by Bettinger Corp., Waltham, Mass., and others (see STEEL, Apr. 13, p. 110). Since porcelain enamel is a nonconductor, its use in electrical parts is growing rapidly. One of the latest electrical applications is in a mercury arc rectifier.

Porcelain enamel's hard, smooth finish makes it a natural for conveyor equipment where lack of friction is an asset. PE bearings are used in milk and other food-processing equipment which can't be oiled.

**For Building Trades**—A. O. Smith Corp. makes a porcelain enamel silo and PE roofing is being experimented with by Ingram Richardson Co., Beaver Falls, Pa., and others. Siding and curtain walls of sandwich-type construction (porcelain enameled metal on the outside, insulation in the middle and plaster or metal facing inside) are being produced.

Corrosive-resistant characteristics of porcelain enamel indicate its value in some pipe and pipe fittings. Pump impellers are being porcelain enameled.

**Dependent**—Indicative of the current primary importance of appliance markets to porcelain enamelers, however, is this: 150 to 200 of the 350 companies doing porcelain enameling are in the appliance field. Some 30 to 40 are in sanitary ware (bathtubs, sinks and plumbing fixtures) and 40 to 50 produce for the architectural, sign and decorative fields. About 15 to 20 firms concentrate primarily on industrial applications. The rest of them are engaged in general enameling.

Enamelers expect little difficulty in obtaining frit in 1953, although there may be some problems with cobalt, an ingredient used in most ground coats because the element possesses the ability to adhere. But enamelers are concerned about the shortage of enameling steel sheet.

Although steelmakers are still increasing their capacity—Armco Steel Corp, U. S. Steel Corp., Inland Steel Co., Republic Steel Corp. and Youngstown Sheet & Tube Co. are major producers in that order—enamelers fear they won't be able to get enough enameling stock to meet their mounting needs. American Iron & Steel Institute figures show the percentage of enameling stock of total steel product output in the first three months of 1953 is actually greater than for the same period a year ago—54,039 net tons or 0.3 per cent of total shipments in the first quarter of 1953, 43,989 net tons or 0.2 per cent of total shipment in the same 1952 period.

**Improving**—Helping to bolster the optimistic outlook of the porcelain enamel industry, together with development of new markets, is the trend toward improved plant layout and increased mechanization, automation. In this way, enamelers expect to hike output and dollar sales without greatly adding to plant or work force.

## Air Force Pushes Birthmarking

The Air Force is pushing its campaign for continuous ink printing as a method for marking alloy steel (STEEL, Apr. 27, p. 64). It points out that the need for a standard marking system which will identify alloy steel at its point of origin and continue its identity through all distribution channels to the point of final consumption is urgent and points to 1952 steel strikes as proving the need.

During those disturbances efforts of fabricators and warehouses to obtain steel from all available sources necessitated expensive piece-by-piece chemical and physical analysis of steel of unidentifiable origin. Government contracts demanded certification as to heat, condition, specification and designation of the producing mill. If similar conditions were to exist in the event of attack by an aggressor nation, production delays would be critical.

# Materials Handlers Lift Sales Efforts

THE SALESMAN who can visualize the proper piece of equipment for a handling job and close the order is priceless. That is what materials handling equipment manufacturers were saying at Philadelphia last week at their exhibition and conference. Few were unhappy about 1953 prospects, but all agreed harder, sharper selling is in store.

The equipment handling show this year nearly outgrew Convention Hall. Exhibitors used 170,000 square feet of floor space. To squeeze all 340 firms into the hall, show managers ripped out two conference rooms and moved outdoors.

**Predictions** — Heavy handling manufacturers make estimates ranging from breaking-even with 1952 sales to a 25 per cent decline. Most small truck makers are cautious about saying they won't reach last year's records, but only two expected to exceed that mark.

Most equipment producers say first quarter sales duplicated or exceeded those for the same period last year. Inquiries are down in the past few months, however.

**Something New**—To smooth the sales force's job, producers are making some innovations. The most radical previews were gasoline-powered trucks using a transmission without clutch or gearshift. Power comes from the gas engine driving a variable voltage generator and an electric motor to attain stepless acceleration. Manufacturers report lower fuel consumption and less maintenance because the two biggest wear points on gas trucks are eliminated.

Electronics may also add to sales inducement. Radio Corp. of America, New York, spotted radio receiving sets on exhibit units of Clark Equipment Co., Buchanan,

# Wanted: Better Way To Handle Sheets

SELLERS of materials handling equipment might find it profitable to look for business among the wholesalers of sheet metal. They need some specialized equipment and methods for handling flat metal sheets.

This was apparent at the spring meeting at Columbus, O., of the National Association of Sheet Metal Distributors. The organization is composed of wholesalers of galvanized sheets, black sheets, tin plate, terne plate, eaves trough, conductor pipe, sheet copper, prepared roofing, warm air heating equipment and other kindred lines.

**"Blood, Sweat, Tears"**—Storage and handling problems were favorite topics of conversation at the two-day meeting, for in storing and handling, says Roger K. Becker, vice president, Ohio Valley Hardware & Roofing Co., Evansville, Ind., "we still are using the 'Churchill formula'—blood, sweat and tears."

The distributors revealed that in response to consumer demand they are stocking a wider line of sheet metal products than they once did. It has been customary to store the sheets flat so that a few sheets can be removed at a time in filling orders. Flat storage is filling up floor space, but, in most instances, is leaving a lot of overhead space vacant.

**Stimuli**—This is prompting the distributors to think about means of storing sheets on edge. Another stimulus is aluminum sheets. Distributors say they should store aluminum sheets on edge so condensation will drain off and not stain the sheets.

The problem starts with how to lift the metal sheets and place them on edge. The problem continues with how to remove the sheets a few at a time. Some of the distributors have devised their

# Bright Prospects for Furnacemakers

THIS YEAR will be good for makers of industrial furnaces and related equipment. And, peering ahead as far as first quarter of 1954, C. H. Vaughan, president, Industrial Furnace Manufacturers Association, and sales manager, Electric Furnace Co., Salem, O., thinks business will be good then, too.

Reflecting the Korean emergency, sales of the 50 IFMA members shot up to more than $130 million in 1951 from about $55 million in 1950. In 1952 sales were $75 million, and Mr. Vaughan expects the 1953 total will be about as high.

**Competition Increases**—Defense business is now largely over the hump and is being replaced by civilian.

Mr. Vaughan foresees more intensified competition ahead but thinks it will be healthy for the industry.

Furnace price increases will depend on the steel wage settlement, but they should not exceed 10 per cent, Mr. Vaughan believes. Furnaces now under contract for the heavy press program are not expected to be cancelled, since any defense cutbacks will offset only those projects less than 20 per cent completed.

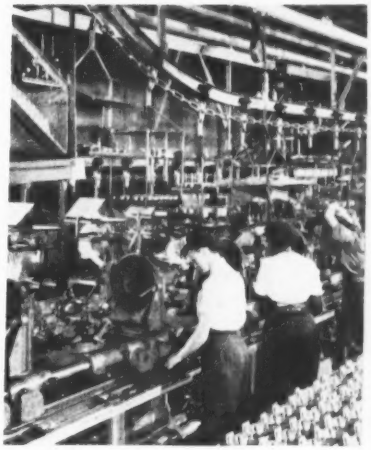
**NPA Change**—Carl L. Ipsen, IFMA executive vice president, told members meeting at Hot Springs, Va., May 18-20, that Na-

Mich. Spectators observed on television a multitruck demonstration centrally directed by a single radio operator. Several onlookers, already users in their own plants, confirm the timesaving merits, but prospects for startling uses are not outstanding. Chief limitations are high prices, difficulty of finding a licensed radio operator and intricate maintenance.

**No Big Shortage**—Material problems among manufacturers are mostly in the "remember when" status. No one is turning down orders because materials are unavailable, but one heavy crane producer lags on deliveries because low carbon wide-flange steel beams are still among the hard-to-get items.

Manufacturers are not going to go as far as the government would like on standardization. As long as producers are convinced they sacrifice competitive advantages by standardizing, progress will lag.

**Popular Show**—The theme, "Last major area open to significant cost-cutting," was stressed at the exhibition. Its effect as a sales point is illustrated by the appearance of about 30,000 curious people at the show. They probably will have to wait until 1956 for their next look because the Material Handling Institute is considering holding the show every three years instead of two.



Ideas conveyed to industry . . .

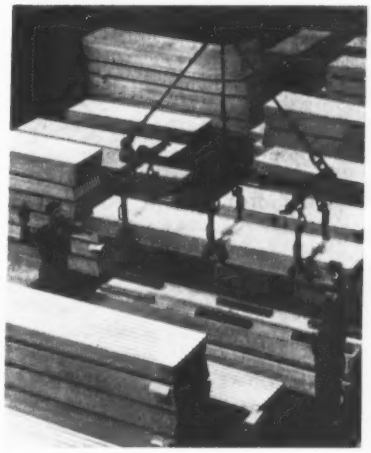
own racks for storing sheets on edge or on end so they can get a few sheets out at a time, but they lament they have to use hand methods of placing the sheets on the racks. They're conscious of the increased costs of labor.

**An Idea**—A representative of a materials handling equipment producer told about a lift truck his company had equipped with an attachment that lifts, turns and sets on end a crate of aluminum sheets. Something like this, plus a means of mechanically picking out a few sheets at a time, might help solve storage problems and reduce handling, distributors agreed.

Importance of the cost factor in handling sheets in the warehouse can be seen from a report of one of the distributors. It costs him from 39 cents to 50 cents a ton just to unload galvanized roofing sheets from a car and stack them in his warehouse, but it costs some other distributors as much as $2 a ton.

**Sign of Affluence**—Emphasizing the importance of good equipment in the warehouse, N. T. Hess, vice president, Vorys Bros., Columbus, O., expressed the opinion that a good press brake is a better sign of affluence than a flashy automobile.

Discussions of cost cutting extended to office procedures, too. With competition becoming keen again, sales methods also had an important spot on the program.

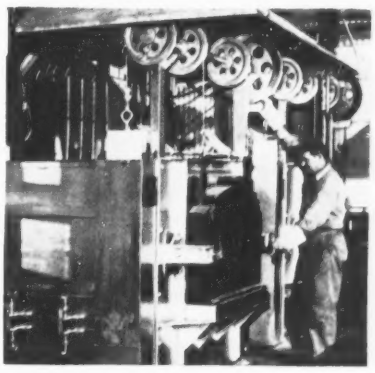


On the floor, a problem . . .

tional Production Authority functions will be taken over by the Department of Commerce July 1, but with 450 employees instead of the present 1100. A metalworking equipment group with a staff of 43 will have industrial furnace, machine tool and foundry equipment sections.

If you have nickel-bearing scrap, turn it in, for it is desperately needed. Ernest A. Schoefer, Alloy Casting Institute executive vice president, told the furnace men that only 4 per cent of the nickel shipped out in heat resistant castings originates from scrap. Ordinarily the percentage is 20 to 40 per cent.

A new lower "HF" alloy for furnace castings containing 19 to 23 per cent chromium and 9 to 12 per cent nickel looks good for applications up to 1600 degrees F. Work also is under way on lower-nickel alloys for service in the 2000 degree range. Mr. Schoefer thinks possibly the new 16 per cent chromium, 16 per cent manganese corrosion-resistant alloy now available in wrought form also may be adopted for castings in furnaces.



From furnaces, a glow . . .

## Cheaper, Better Stainless

**More efficient alloy agents are in the making to improve alloy steel production**

A NEW ferrochrome alloy made commercially for the first time should make stainless steel production cheaper.

**Key Factor**—There is virtually no carbon in the new alloy; less than one part in 10,000 is not uncommon. Known as Simplex ferrochromium, this alloy's production is the most significant feature of Electro Metallurgical Co.'s Marietta, O., ferroalloy plant now under construction.

The first Simplex ferrochrome furnace at Marietta went into operation in January. Three others were fired this month. Four additional furnaces will be completed by fall. They should boost production of the new product to the 60,000-ton annual mark. Electromet spent over $2 million in research and development in ten years to learn how to reduce carbon in ferrochrome from three parts in 10,000 to one part in 10,000.

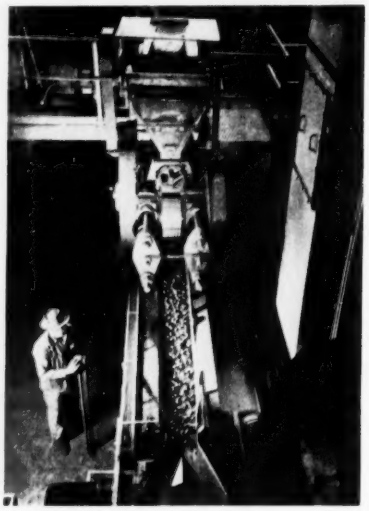
**Here's How**—High carbon ferrochrome is delivered to the Simplex chromium plant from the main electric furnace building at the Marietta plant. Next step is to crush it in huge ballmills to a fine powder passing 325 mesh and mix it with a silica material. This mixture is pelletized and the pellets, about the size of walnuts, are dried.

About a million dried pellets are charged into a specially-constructed electric furnace where they are given a carefully controlled high temperature treatment under vacuum. Unwanted carbon is oxidized by silicon and burned away. Final product contains about 65 per cent chromium, 5 per cent silicon, 5 per cent silica and the balance is iron. It is not unusual for carbon content to be 0.008 per cent.

**Economies** — Although the new alloy was originally developed for making very low carbon steels, its use in regular stainless steel manufacture is desirable. Economies result from faster furnace operation and greater chromium recovery.

Small pellets can be melted rapidly, saving furnace time. This is important in producing very low carbon grades of stainless steel for optimum corrosion resistance.

**Pure Chromium**—Other facilities are being completed at Marietta which will make high-purity electrolytic chromium available commercially for the first time. Starting material is smelted chromium composition which will be dissolved



FROM PELLET MACHINES
*. . . a revolutionary ferrochrome alloy*

to give an acid chromium solution from which the chromium will be electroplated on stainless cathodes and periodically stripped.

The high-purity chromium will find use in the manufacture of high-temperature alloys for jet engines and rockets, in production of titanium alloys, in nonferrous alloys for heating elements, and for nonferrous metal cutting tools which operate at red heat. Best guess now is that production will be in the 4-5 million pound per year range.

**Manganese Too**—Ground is being broken for an electrolytic manganese plant which will be completed late this fall. Estimated output is around 10-12 million pounds per year of very high-purity manganese. Some of the new stainless steels developed for structural purposes contain as much as 16 per cent manganese (STEEL, Mar. 9, 1953, p. 94). There's good evidence that steel producers are giving plenty of thought to the substitution of some manganese for nickel to keep the structure properties of the 18-8 type.

## Wisco Aluminum Expands

**Storm window company will produce 45 million pounds annually of sheet, coil, extrusions**

WISCO ALUMINUM Corp., Detroit, large producer of extrusions for aluminum storm windows, is entering the field of completely integrated aluminum fabrication with a new plant on Outer Drive in Lincoln Park, Mich.

The company will buy its pig aluminum from the three prime producers in the country. In addition, the new 110,000-square-foot plant has facilities to remelt its own scrap and cast it into pigs. When in full operation, Wisco will be able to produce sheet, coil and extrusions at the rate of 45 million pounds a year.

**One of Few**—With this expansion, Wisco becomes one of the few completely integrated fabricating aluminum mills in the nation and the only one east of Chicago and north of the Ohio river, according to Robert S. Wisok, president.

Equipment in the rolling department includes a hot mill, upcoilers, rundown and finish mills, annealing furnaces, slitters, edge trimmers, sheet shears and levelers, batch-type corrugator, embossing machine, heat treating furnaces and preheat furnace. It will handle coils up to 1200 pounds in widths up to 36 inches.

**Extrusions** — The extrusion department has a large extrusion press, stretcher and detwister, induction billet furnace, aging ovens, horizontal heat treat furnace, vertical heat treat furnace, roll straighteners, draw benches and two-plane straighteners. In addition the plant has a semicontinuous anodizing line of the sulphuric acid type. This is all in addition to the company's present extrusion plant in Detroit which has been making storm windows since 1946.

The plant is located on a 20-acre plot of land, with 9 acres devoted to a landscaped park. There are no smokestacks, because all power is electric. Mr. Wisok says that feature will make Wisco one of the principal wholesale consumers of electricity in the whole of industrial Detroit.

**Open Wider, Please**

An "Industrial Dentist" is kept busy checking thousands of teeth each day at the General Electric Co.'s jet engine plant at Evendale, Ohio. The "teeth" are blades from the compressor section of GE's J47 jet engine

## Contract Opportunities Loom Despite Budget Cuts

DON'T LET the economies in Secretary of Defense Charles Wilson's budget requests fool you as far as subcontracting is concerned. There will still be plenty of opportunity to get your share of government work if you want it.

Mr. Wilson is asking Congress for $43.2 billion for the Defense department in fiscal 1954. That is $2.3 billion less than former President Truman requested. Most of the cutback is in the Air Force column—from $17.5 billion to $15.1 billion. But again, don't let that fool you.

**Wild Blue Yonder**—Mr. Wilson told the Senate Military Appropriations Subcommittee that his plans call for an actual increase of 30 per cent in numerical strength of the Air Force. Of the 103 wings now existent, ten do not have their combat aircraft. Chairman Dewey Short of the subcommittee reports that the number of fully equipped air combat wings has been increased from 47 to 73 since President Eisenhower took office. It is evident, then, that the administration, in its efforts to cut costs, does not intend to hamper its efforts to bolster our defenses. And that spells business for subcontractors. At present, the Air Force lists 3000 prime contractors and 35,000 subcontracts.

The bright prospect for war work is bolstered by the fact that by June, 1953, the Defense department will probably have available for spending almost $100 billion. An estimated $62.6 billion will be carried over from past appropriations, and new requests will amount to over $36 billion. With that much money still to be spent for defense, business should be brisk for some time to come despite over-all cutbacks.

**Air Force Still Tops**—Of that total figure, the Air Force accounts for over $40 billion; the Army will spend almost $31 billion; the Navy will come in for $26.5 billion, and interdepartmental activities will take up about $1.3 billion.

Elsewhere in the budget picture, the story is the same—economies but no great threat to our defense effort. The administration's $480 million cut in requests for the atomic energy program will mean postponement of the actual construction of power plants for proposed atomic-powered aircraft carriers and an atomic-powered airplane. But work on the Ohio atomic plant and reactors for two atomic submarines will not be curtailed in any way.

## CHECKLIST ON CONTROLS

### Materials Orders

STEEL—NPA Order M-1A, issued and effective May 14, 1953, continues government control on carbon, nickel-bearing stainless and alloy steel products after June 30, 1953, only to assure production and delivery for direct military and atomic energy applications. It requires producers and further converters to reserve space on the mills for authorized controlled material orders bearing the symbols A, B, C, D or E and a digit. It supersedes NPA Order M-1.

CRYOLITE—NPA Order M-99, dealing with controls over cryolite, was revoked effective May 20, 1953, instead of Apr. 30, as previously reported.

COPPER—NPA Order M-11 and Direction 5 to Order M-11, dealing with copper controls, were revoked on May 20, 1953. They were superseded by Order M-11A, which was effective May 6.

NICKEL—Amendment of May 20, 1953, of NPA Order M-80 provides for allocating nickel on a monthly instead of a quarterly basis effective July 1, 1953.

### NPA Regulation

BASIC RULES—Direction 3 to NPA Regulation 2, basic priority rules, was revoked effective July 1, 1953. It was issued May 20.

### Mineral Order

MANGANESE—An amendment of May 19, 1953, of Mineral Order 2 removes all allocation controls from manganese ore after June 30, 1953, except that of the order authorizing the defense material procurement administrator to issue special directives covering deliveries of manganese ore.

## Alcoa Starts Third Potline

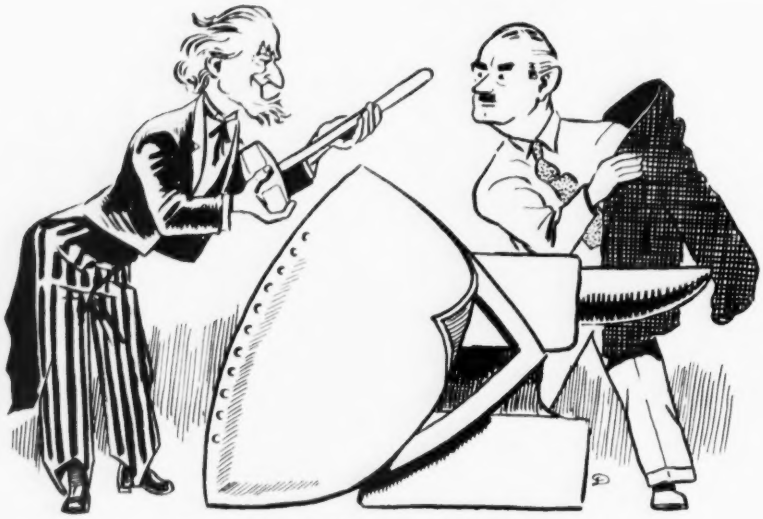
Early availability of a new source of power has enabled Aluminum Co. of America to begin production on the third of four projected potlines at its aluminum plant at Rockdale, Tex.

Two potlines were placed in operation when the plant opened last year. Start of production on the other two potlines was expected this fall when Alcoa's lignite-burning power plant was scheduled for completion. A temporary source of power furnished by the Texas Power & Light Co. makes it possible to begin production on the third potline and the fourth will go into operation when the power plant is completed.

When in full production Alcoa's Rockdale plant will have an annual capacity of 170 million pounds of aluminum.

# Windows of Washington

By E. C. KREUTZBERG *Washington Editor*



VITAL ODM TASKS FOR INDUSTRIALISTS
*. . . industry gets a bigger role in national defense*

**ODM reorganization will give six top positions to industrialists. Plans are to insure industrial participation in all future emergency bureaus**

UNDER Office of Defense Mobilization reorganization plans—to go into effect June 12 unless Congress opposes—industrialists will be given the top posts in mobilization planning. No congressional opposition has yet developed.

**Posts**—Six industrialists are to be selected as assistant directors of "nonmilitary defense," "production requirements and programs," "financial policy," "manpower," "stabilization" and "material." They will be recruited to serve six-month terms on a rotating basis.

Presently, ODM is concerned with planning for the "present emergency." Under its executive order it "directs, controls and coordinates all mobilization activities of the executive branch, including production, procurement, manpower, stabilization and transport activities."

**For the Future**—Under the reorganization plan it will plan for the present and for all possible future emergencies. The objective is to make industrial-economic capabilities adequate to support the nation's military and diplomatic commitments and plans.

ODM will continue strictly as a planning agency, to be strengthened by transfer of the stockpiling functions of the National Security Resources Board. The new plan provides that action groups such as National Production Authority will remain in the various government departments but continue to shape their actions on the basis of ODM orders.

**New Agencies** — The plan provides that any new agencies needed in a war emergency might be recruited from the ODM staff and thereafter built up by recruiting men from industry. For example, if a new Office of Price Stabilization were created by Congress the ODM would furnish the nucleus of men and build on this group.

ODM will continue its present advisory committees on science, health, defense mobilization, manpower and other subjects.

## Toward Better Government . . .

President Eisenhower is creating a commission to simplify the operational procedures of the federal government's rule-making and adjudicating agencies. This move was suggested by Chief Justice Vinson. He explained that it takes businessmen too long and necessitates unduly heavy expenses for lawyer's fees, etc., in getting permission to operate a radio broadcasting station or an interstate bus line.

Appointed to head the new commission is Circuit Judge E. Barrett Prettyman, of the United States Court of Appeals for the District of Columbia. His task is to eliminate "unnecessary delay, expense and volume of records" in applications to the following commissions: Interstate Commerce, Federal Power, Federal Communications and others.

## New Depreciation Policy . . .

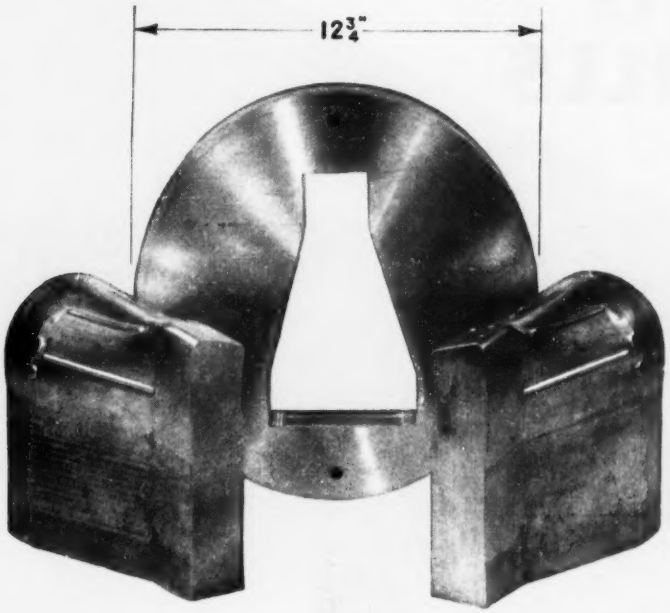
A new administrative policy with respect to depreciation adjustments for tax purposes has been announced by Commissioner of Internal Revenue T. Coleman Andrews. Purpose is to reduce controversies between taxpayers and the bureau.

"The internal revenue laws," says Mr. Andrews, "allow as a deduction in computing net income a reasonable allowance for depreciation of property used in trade or business, or of property held for the production of income. The purpose of the deduction is to permit taxpayers to recover through annual deductions the cost of the property over the useful life of the property.

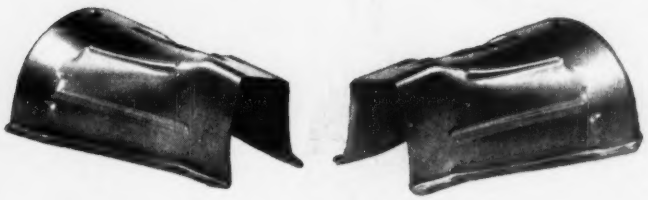
"The determination of the deduction is a matter about which there may be differences of informed judgment, but the impact on revenues resulting from these differences may be negligible over the years involved.

"Accordingly, effective May 12, 1953, in all open years for which agreement as to the tax liability has not been reached at any level within the Internal Revenue Service on that date, this service won't disturb depreciation deductions. Revenue employees shall propose adjustments in the depreciation deduction only where there is a clear and convincing basis for a change. This policy shall be applied to give effect to its principal purpose of reducing controversies with respect to depreciation."

# Just this tooling ...




# makes 2 drawn parts...



# by Hydroforming

*What would it cost you to tool this job?*

**HYDROFORM TOOLS ARE CHEAPER TO MAKE**

The parts illustrated below are right-hand and left-hand sections of a stainless steel duct—a jet-engine component. The one draw ring shown was used to Hydroform *both* parts, by simply turning it upside down to draw the opposite section. The punches were made of cast iron, machined to shape.

Liberal clearance is permitted between the punch and draw ring—up to 50% of the thickness of the material being drawn. Punches can be made of inexpensive, easy-to-work materials—mild steel, brass, Kirksite, plastics—depending upon the material and shape of the part.

**GET BETTER PARTS... BIGGER SAVINGS... BY HYDROFORMING**

You'll save on tool costs, *certainly*, by Hydroforming—and produce parts of *higher* quality, in *fewer* operations as well. Bulletin M-1759-1 gives detailed information on this simplified deep drawing process. Write for your copy. For data pertinent to your production, call in a Cincinnati Milling field engineer.

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**THE CINCINNATI MILLING MACHINE CO.**
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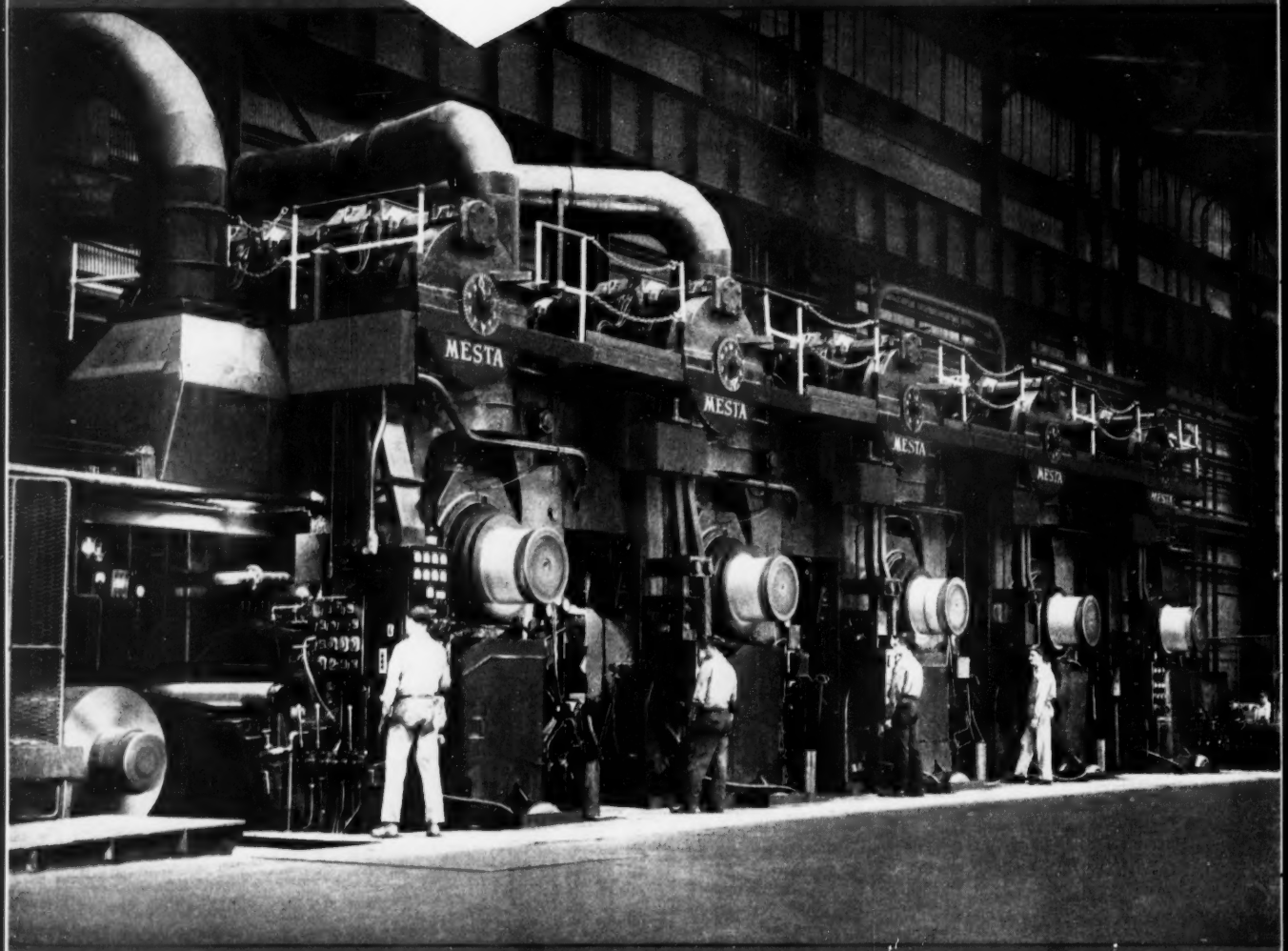
# Hydroform

# MESTA

## HIGH-SPEED COLD MILLS




MESTA 56" FOUR-HIGH, FIVE-STAND HIGH-SPEED TANDEM COLD MILL INSTALLED IN A LARGE EASTERN STEEL PLANT.

SIMULTANEOUSLY MACHINING ROLLING MILL HOUSINGS IN PAIRS ON MESTA HEAVY DUTY DRAW-CUT SHAPERS

*Designers and Builders of Complete Steel Plants*

**MESTA MACHINE COMPANY**

**PITTSBURGH, PENNSYLVANIA**

# Businessmen Assess the MSA

**Teams of businessmen took on-the-spot looks at the conduct of the MSA in 14 countries. Critical reports call for better planning, unification and fewer employees**

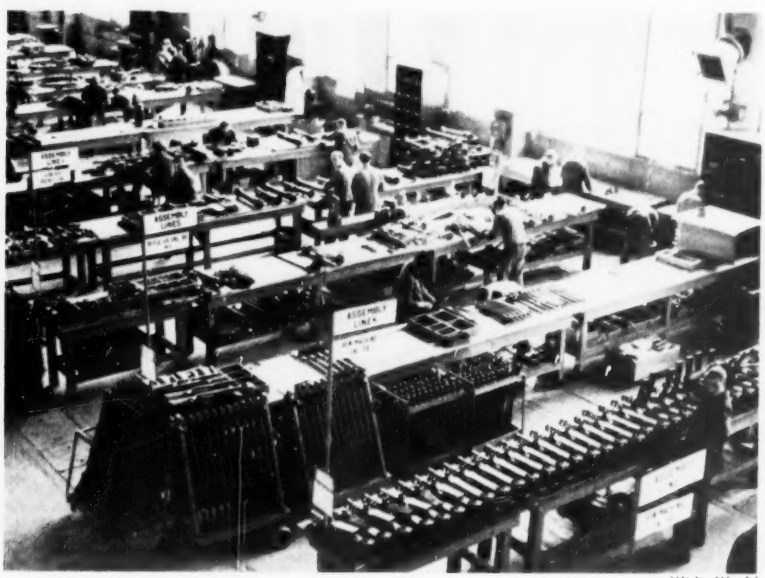
THE MUTUAL Security Agency has asked for, and gotten, frank advice from businessmen on the conduct of MSA. The question now is whether MSA will take it.

The businessmen's recommendations ranged from drastic personnel reductions to "abolition of the MSA mission, transfer of MSA to the State department and the limiting of the director for mutual security to matters of co-ordination." That latter counsel came from the West German team report.

**Without Pay** — Fifty-four businessmen, composing 11 "Evaluation Teams," made on-the-spot studies of the nine Western European and five Far Eastern countries which have received the largest amounts of dollar aid. All served without compensation.

Not all the team reports stressed negative actions. The Belgium, Netherlands and Luxembourg team thought offshore procurement of military can be a good means of assisting the defense build-up generally and should be continued. But it noted that there appeared to be "too many different procurement offices for the various services" for offshore procurement at present.

**Getting Particular**—The French team recommended that economic aid be "devoted specifically to the prosecution of the war in Indochina" and that offshore procurement be conducted on strictly military and strategic considerations "to the exclusion of social, broad economic and psychological objectives." The Indochina team suggested "economic aid for fiscal 1954 be continued at approximately the present level" since any large cut in the program would weaken our prestige and yield only negligible savings relative to the over-all aid expenditures for Indochina. The Philippines team said too much emphasis is placed by MSA in Washington and Manila on the spending of funds allocated and too little emphasis on the optimum utilization of the funds. They recommended more exact goals within a broad plan with a "time schedule of performance" to be agreed on by both the MSA and the Philippines government before any more projects are committed.



Wide World

**New Arsenal of Europe**

Weapons of the U.S. Army in Europe are rebuilt in this modern factory at Mainz Germany. An American staff of specialists supervises the work of more than 1200 skilled and semiskilled German employees. In 1952 nearly 120,000 separate items, ranging from small arms to big guns with a total value of about $157.5 million, were refurbished on these assembly lines

JAMES MITCHELL
*. . . new BISI president*

## BISI Holds Annual Meeting

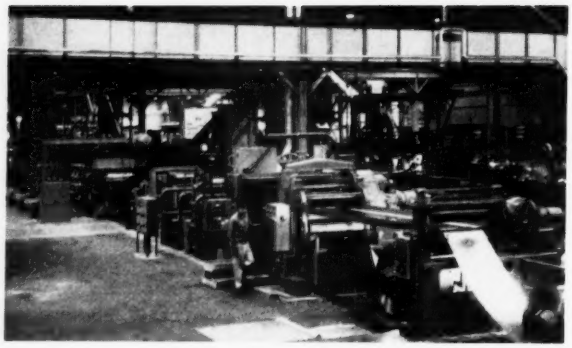
New president of the British Iron & Steel Institute is James Mitchell as of the institute's annual meeting in London, Apr. 29 to May 1. Another highlight of the meeting was a session on boron steel to which L. J. Rohl, chief metallurgical engineer, U. S. Steel Corp., and H. B. Knowlton, International Harvester Co., contributed papers. This particular session of the BISI was sponsored by the Mutual Security Agency.

## Europe Takes a Cue from U.S.

Europe, taking a cue from the U. S., has increased the use of instrumentation and automatic control equipment by at least 50 per cent since the end of World War II estimates H. F. Dever, president, Brown Instruments Division, Minneapolis-Honeywell Regulator Co.

To help meet the growing demand, Honeywell is boosting production of automatic control equipment at its Blantyre, Scotland, factory and is expanding its service facilities throughout Europe.

Below the white line, new sheet and tin mill construction



Tin plate for western canneries speeds off this modern line

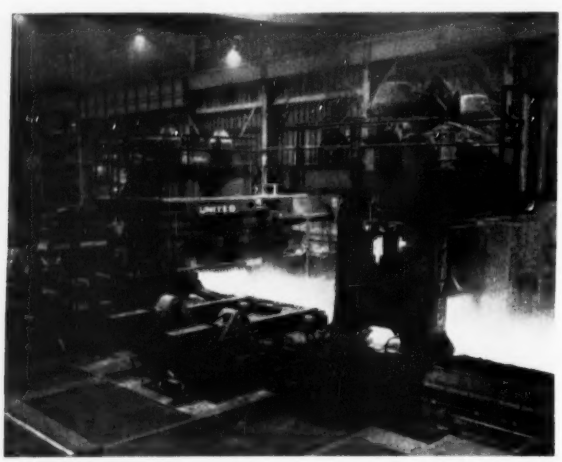
# Columbia-Geneva Boosts Capacity

**New cold-reduction mill and tinning line raise sheet and tin plate production 68 per cent at U. S. Steel Corp.'s Pittsburg, Calif., plant**

COLUMBIA-GENEVA Steel Division of U. S. Steel Corp. has completed a major expansion at its Pittsburg, Calif., plant designed to boost its sheet and tin plate production about 68 per cent.

Key new installations in the plant, which is now capable of producing well over 500,000 tons of those products annually, are a 4-stand cold-reduction mill and a high-speed electrolytic tinning line. The expansion also includes continuous pickling and galvanizing lines, new batch annealing facilities, a side trim and recoil line, a slitting line and 13 additional overhead bridge cranes.

**Growing with the West**—Alden G. Roach, president of the division, told STEEL, "This expansion of facilities is evidence of U. S. Steel's continuing desire to keep pace with the increasing needs of steel users in the West." Installation of the new equipment has increased employment in the plant to more



First ingot rolls through Armco's 80-inch hot strip mill

# Oldest to Newest at Armco

**Eighty-inch hot strip mill at Ashland, Ky., replaces a veteran that made continuous rolling history thirty years ago**

OLDEST AND NEWEST worked side by side May 20 when Armco Steel Corp. ran the first ingot through its new 80-inch continuous hot strip mill at Ashland, Ky. Paralleling the new mill is the one which made rolling history 30 years ago when the concept of continuous rolling was born.

Rated at 150,000 tons per month, present output from the 80-inch mill will be about half that figure.

than 4800 persons, 1400 above the World War II peak and about 1000 more than when the sheet and tin mill first went into operation in 1948.

**Welcome Relief** — The new 4-stand cold-reduction mill will roll sheet steel, relieving the plant's 5-stand cold-reduction mill of the dual job of rolling both sheet and tin plate. It can process coil up to 54 inches in width at a speed of 3500 feet a minute.

The hydraulic accumulator for counterbalancing the upper rolls has a total weight of 78 tons providing 3500 pounds per square inch. Pressure is maintained automatically through a hydraulic pump operated by a 30-horsepower motor.

Hot-rolled coils, 24 inches to 50 inches wide, are supplied from the division's Geneva Works in Utah. Raw coil storage capacity at Pittsburg has been enlarged by 10,000 tons. Coils are fed to the new continuous pickle line by a hydraulic pusher conveyor. After fastening, the steel passes to a wet looping pit 43 feet long.

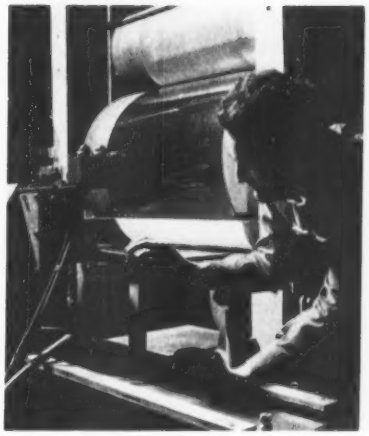
**Something New**—There are four acid tanks, each lined with brick on a rubber base. From the hooded tanks acid fumes and waste pickle liquor are disposed of through a flue which is brick-lined to resist corrosion.

Ram-type lift trucks convey the coils to either the 5-stand mill for conversion into tin plate or the new 4-stand mill for cold rolling into sheets. The latter mill has a turntable at the entry end, eliminating the necessity of maneuvering the lift trucks, as coils can be placed from any position.

New coils are threaded into the mill by a device invented by one of the Pittsburg Works employees. It is an open-sided pinch roll with the top roll operating on a tilting fulcrum. The top roll is raised so that strip can be placed either end-on or sideways into the unit. It is then lowered and operated under hydraulic pressure.

Addition of the second electrolytic tin plate line more than doubles the plant's capacity to produce tin plate. It can operate up to 1250 feet a minute.

**More Gas** — South of the roll shop is a new unit for producing by the ammonia dissociation process hydrogen gas for the continuous galvanizer for sheet products. Nitrogen gas is produced by an additional 20,000-cubic-foot atmosphere gasmaking unit for the annealing furnaces and for the continuous galvanizing line.



Automatic beta-ray gage continuously checks tin plate thickness

About 7400 tons of structural steel were used in the buildings and facilities just completed. It required 1200 freight cars to ship the machinery and equipment.

**One Step Closer** — Officials at Columbia-Geneva believe the expansion brings a little closer the day of self-sufficiency of the West in steel, although they realize that day is still a long way off despite the phenomenal growth of industry in the region during the last few years.

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The 2000-foot line is housed in a single building and includes ingot stripping and soaking facilities; slab mill, scarfer and furnace; roughing stands, finishing stands, runout tables and downcoilers, as well as the usual shears and transfer tables.

**Ready for Future**—"The better features of all the continuous mills built in the last 30 years have been designed into this one," reports J. M. Lobaugh, manager of the Ashland Division. "We have a sturdy mill, amply powered to handle today's needs and anticipated future demands."

With the new mill, Armco Ashland will be able to ship more finished metal from the same number of ingots. By rolling coils instead of sheets, yield losses in sheared metal will be cut. Coils can be rolled to ordered width and precise gage, then cut into sheets with only small end losses.

**Efficiency Plus**—Communication is an important item in a highly co-ordinated operation of this kind. An intercom system linking the various control points along the line with crane operators and open-hearth lab makes it possible to "talk" various heats through the mill. Automatic control of soaking pit covers and ingot buggy from stripping and charging cranes also improves efficiency.

Another design point is found in the scale recovery system. Anticipating more stringent river pollution laws, Armco engineers provided special sumps and settling pools so that water returned to the Ohio river will be considerably purer than river water. Recovered scale is charged back into the blast furnaces.

Additional expansion scheduled for the Ashland Division includes a new continuous pickler, a cold reversing mill and installation of two continuous Zinegrip lines. The latter will specially process sheet through a new technique developed by Armco.

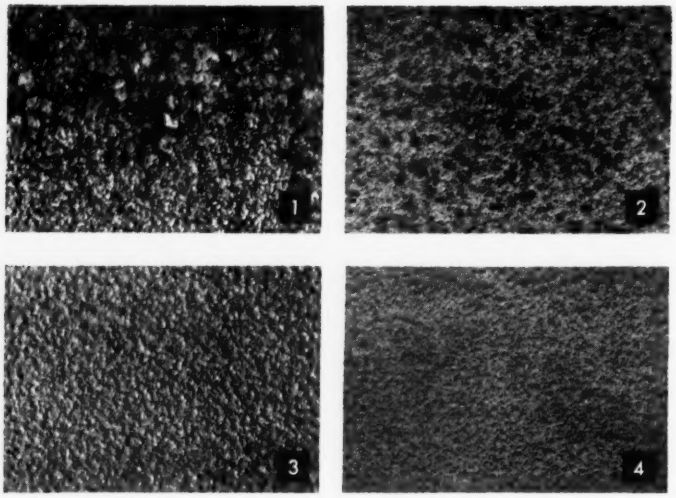
On hand for the first running was W. W. Sebald, Armco president, together with a host of other company top executives.

Specify

**N·A·X**
HIGH-TENSILE STEEL

for

# Longer Life through Corrosion Resistance




Photographs show effects of atmospheric corrosion after six years' exposure of unprotected surfaces.

1. Low carbon sheet steel showing friable heavy rust.
2. Low carbon sheet steel with rust removed showing heavy pitting.
3. N-A-X HIGH-TENSILE sheet steel showing tightly adhering rust.
4. N-A-X HIGH-TENSILE sheet steel with rust removed showing absence of excessive pitting.

Low carbon sheet steel lost four times more weight than N-A-X HIGH-TENSILE in six-year test. With increased time this ratio becomes greater.

N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections—resulting in lighter weight of products. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values at normal and sub-zero temperatures and the abrasion resistance of a medium high carbon steel—resulting in longer life of products.

N-A-X HIGH-TENSILE, with its higher physical properties, can be readily formed into the most difficult stamped shapes, and its response to welding, by any method, is excellent.

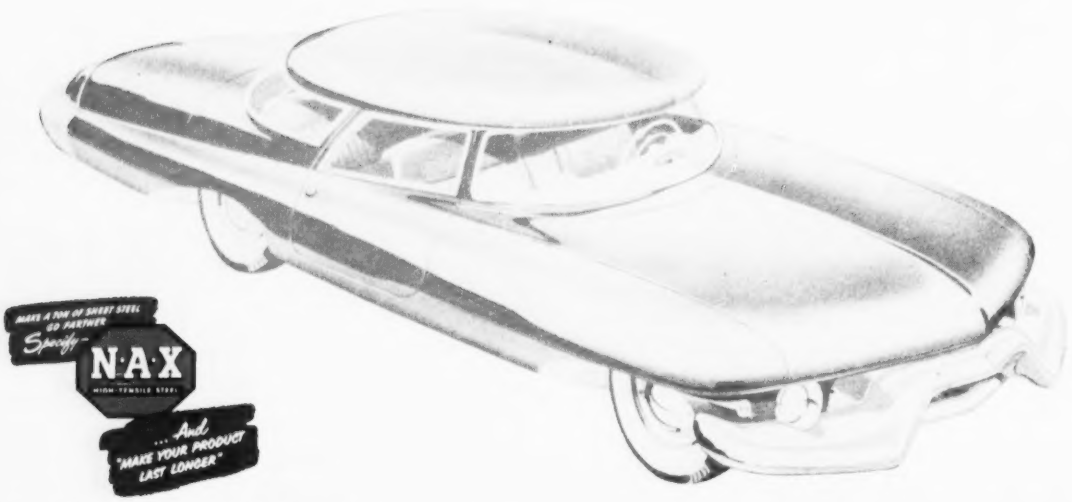
Due to its inherently fine grain and higher hardness, it can be ground and polished to a high degree of lustre at lower cost than can mild carbon steel.

Your product can be made lighter in weight . . . to last longer . . . and in some cases be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

**GREAT LAKES STEEL CORPORATION**

N-A-X Alloy Division — Ecorse, Detroit 29, Michigan

**NATIONAL STEEL CORPORATION**




KEEP YOUR SCRAP MOVING TO YOUR DEALER

By FLOYD G. LAWRENCE *Detroit Editor*

# Mirrors of Motordom

**Present output of Buick's new V-8 engine of 1500 units weekly will eventually reach 3600. By 1954 the GM division expects to put all its production eggs in the V-8 basket**

*DETROIT*

BUICK HAS A NEW V-8 this year. It has a combustion chamber remarkably similar to that developed independently in the vaunted Mercedes 300SL sports car, peaks at 188 horsepower on premium fuels utilizing an 8.5 to 1 compression ratio and is 170 pounds lighter than its in-line eight predecessor.

**Up to the Minute**—Buick's new V-8 is very much up to the minute, and behind it stands a production setup as up to the minute in every way as its product. Most prominent feature of the plant in Flint is the 880-foot-long pedestal-type conveyor on which the engines are assembled. The fixtures rotate through 360 degrees and build-up begins with the block inverted. About a third of the way down the line with the bottom portion of the motor assembled complete with oil pan, the engine is turned right side up and proceeds ever after with a normal outlook on life. Seven subassembly lines feed into the main engine assembly line at the appropriate points in the engine assembly process, and it is down these subassembly lines that the ingenuity of the Buick Engine Plant can be most appreciated.

**New Technique**—One of the most interesting is flywheel assembly—that's right, assembly. The obvious way to make a flywheel is to turn it from a steel casting and Buick still makes them that way for its non-Dynaflow cars. But the flywheel on the Dynaflow job starts life as a sheet of steel and a bar of $\frac{5}{8}$ inch square cold-rolled. From the sheet the wheel proper is stamped with a casual kerwhump, but the ring gear surrounding the flywheel for engagement with the starter pinion is a different matter.

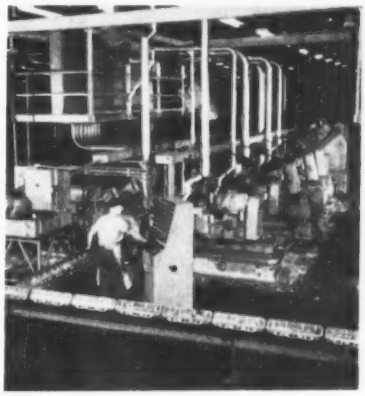
Remember it starts as a square bar of cold-rolled. Step number one is to run the bar through a set of rolls which bends it into a springlike coil of four loops. The coil is then cut through at one point yielding four rings with a cut in one side like a key ring. This cut is then welded in a fixture and the flash trimmed off with a set of dies to form a ring which is put through a normalizing furnace to remove the hard spot caused by the weld.

**Tricky**—The inside and outside diameters are then turned and 14 of the rings are placed on an arbor on a gear hobber which hobs the teeth. Then things start to become tricky.

The ring is placed on a Cincinnati flame hardener fixture which rotates the ring gear while oxy-propane flames heat the teeth. A thermostat controls the operation by heat radiation from the teeth, and when they have been heated to 1650 degrees F to full tooth depth in a matter of a few seconds, the fixture is tripped electrically dropping the gear into a quench.

**Fast Work**— Before the gear has a chance to consider its stresses, it is removed from the quench and placed in an induction coil which heats it slightly once again to expand it. A few seconds do this job and the ring is then dropped over the flywheel disc stamping in a locating fixture. A water quench in position, and the ring is shrunken onto the flywheel disc solidly. The unit is then skip-welded at the joint of the ring gear and the stamping is ready for business.

Despite the seeming labyrinth of operations, Buick reports the method is saving money. Another operation in which money-saving is more readily apparent is the fabrication of valve push-rods. These parts are $\frac{1}{4}$-inch diameter steel about 6 inches long with a $\frac{3}{8}$-inch knob on each end. The tolerance on the length is .020 inch, and the original plan was to rough cold-

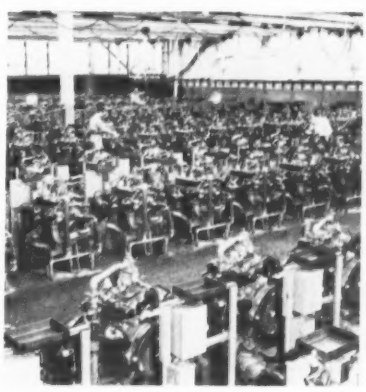


**Machining Heads**

In this transfer machine Buick V-8 heads are drilled, reamed and tapped

**Final Assembly**

Buick V-8's come off the final assembly line on their way to block test



**Block Test**

Lined up on test stands, a forest of V-8 engines get their initial run-in

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head the ends, run the pieces through grinders to get the length, and then run them through a second set of grinders to reform the radius on the heads.

**Eliminated**—The grinding operations soon made themselves evident as a bottleneck, and, through careful setup, grinding has been eliminated. Buick now cuts off and cold-heads both ends of the valve push-rod in one operation from coiled stock at the rate of 300 finished pieces an hour. The grinders have been retained as a possible repair setup for oversized pieces, but they're getting mighty dusty due to disuse.

A conveyor chip collection system and a central coolant installation are other modern touches at the Buick plant. Anodizing aluminum pistons to inhibit scoring is a unique step. Heads and blocks are broached on double-acting horizontal broaches which utilize an elevator fixture to position the workpiece for the return cut with a second set of tools. Automation is evident to a high degree in block machining operations all the way down the line. Among noteworthy pieces of equipment are an Ingersoll process machine 128 feet long, an 18 station Barnes machine, two 17 station Greenlees, several Ex-Cell-O boring machines and two Barnes lappers.

**Third Finished**—The block line is actually only about one-third complete, and when the remaining pieces of equipment are delivered later this year, the line appears to be possible of virtually complete automation. Present production is running 1500 engines a week with an expected ultimate capacity of 3600 engines weekly.

In 1954, Buick will drop production of its in-line eight entirely and put all its production eggs in the V-8 basket. For that reason, production men feel that this year of limited production is valuable in permitting them to experiment with production ideas before the real push for top production starts later this year.

## Car of the Week

The car of this week, of course, is the Roadmaster-type repository of the Buick V-8 engine.

In the opinion of many, the postwar Buick Roadmaster was slow to start moving and once under way resisted with considerable success any effort to alter its direction or impede its forward motion. One writer dubbed it "a 4500 pound cruising balloon," as opposed to the more utility type vehicle. In some respects the indictment still holds true, but the Buick is evolving.

### Auto, Truck Output

U. S. and Canada

| | 1953 | 1952 |
|---|---|---|
| January | 612,815 | 424,559 |
| February | 623,793 | 464,577 |
| March | 747,142 | 525,024 |
| April | 780,491* | 570,464 |
| May | | 542,559 |
| June | | 542,478 |
| July | | 226,134 |
| August | | 322,755 |
| September | | 595,715 |
| October | | 656,767 |
| November | | 548,782 |
| December | | 569,715 |
| Total | | 5,989,509 |

| Week Ended | 1953 | 1952 |
|---|---|---|
| Apr. 18 | 162,171 | 131,657 |
| Apr. 25 | 194,610 | 134,141 |
| May 2 | 184,800 | 123,385 |
| May 9 | 179,621 | 130,509 |
| May 16 | 178,018 | 129,945 |
| May 23 | 172,000* | 127,723 |

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

The 1953 Roadmaster with Twin-Turbine Dynaflow utilizes a second turbine driving through a new second set of planetary gears to give increased torque multiplication at speeds up to 20 miles an hour. Coupled with the new V-8 engine, this makes the Roadmaster among the easier cars to get into motion despite its weight. Acceleration is definitely better than average at any stop light in a respectable neighborhood.

Buick still retains its traditionally balloonish ride, which can perhaps thus be likened to a pullman car or an airliner on a billowy summer day. The car literally gives the sensation of floating over bumps and is one of the top road-smoothing cars in the country today.

Cornering and roadability both are getting better as the engineers carefully retain their superb ride, but putting the Buick into a parking place still is reminiscent of winding an 8-day clock.

But on the open roads Buick is in its glory. Passing acceleration is very good, visibility is good and ride is tops. Buick is indeed one of the pleasantest distances between two points, which does much to explain its position as number four in sales behind only the lower-priced Chevrolet, Ford and Plymouth.

## Exhaust Notes

If you think the Plymouth colors are gay this year, wait until the 1954 models splash onto the highways. Though light, medium and dark shades of green, blue and gray account for 80 per cent of all sales, the 20 per cent who want their cars to be different really want them different.

Color selection at Plymouth is based on consumer research subject to approval of management, and among the new tones approved for the Plymouth is a really yellow-yellow, brighter in hue than the mustard-brindle now adorning certain Chevrolets.

There is just as much BTU content or power in one gasoline as another regardless of what advertising men would have you believe, reports a petroleum engineer. The difference in basic brand blends is negligible in the classification of regular which today runs 87 octane and premium which hits about 93 octane. However, higher octane fuels resist pinging under higher compression.

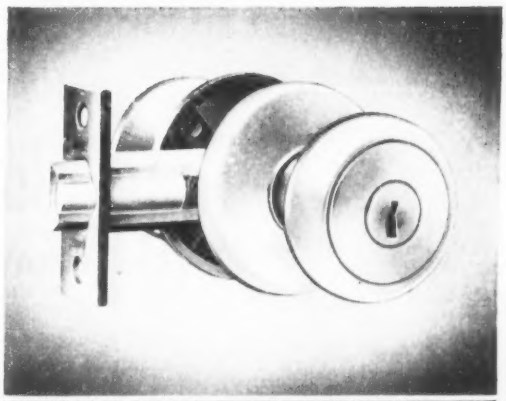
What this means to you is this: If you don't get pinging from regular gasoline in your car you will not get a single BTU more power from using premium. Only when the engine pings are you losing power and only then will you gain by buying premium fuel.

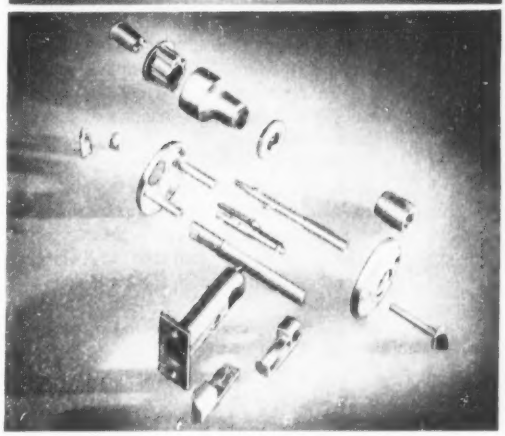
Two brand new Buick Skylarks are reported to have turned up on a pair of used car lots hereabouts. When that happens to a new car it means that the price is being adjusted either up or down. In the case of the Skylark, delivery is running 30 to 60 days from dealers and suspicion is high that the demand for this sports-type car is big enough to intrigue the quick turnover speculators.

Kwikset LOCKSETS

*provide a key to-*

# get the mo$t for your Zinc Die Ca$ting Dollar!





Attractive in design and beautifully finished in polished brass*, this lockset has also been engineered for precise, but rugged, construction at minimum cost. This combination of properties, achieved largely by the use of ZINC Die Cast components—16 in all—has resulted in the sale of millions of the locksets for private residences and large-scale housing developments throughout the U. S. and abroad.

The plain fact of the matter is that no metal and method of production other than ZINC Die Casting could turn out the lockset parts (lower right) with equal properties at comparable cost. Thanks to the complexity of shape possible with ZINC Die Castings, one part is made to serve in place of several—with impressive savings in both machining and assembling. Close tolerances, as cast, insure perfect fit of mating parts, and the inherent strength of ZINC provides the dependability so important in this type of product.

In selecting a die casting alloy there are many factors —both physical and mechanical—to be considered in addition to the base price of the metal. Ask any commercial die caster about the advantages of ZINC Die Castings—or write to us.

*Also available in polished chrome, or in satin brass, bronze or chrome.

**The New Jersey Zinc Company**
**160 Front St., New York 38, N. Y.**

**Send for your copy**

**ZINC**
FOR DIE CASTING ALLOYS

**The Research was done, the Alloys were developed, and most Die Castings are based on**

**HORSE HEAD SPECIAL (99.99 + % Uniform Quality) ZINC**

# "A Triple play BY RB&W REALLY SAVED US PLENTY!"

"It took us by surprise," Al went on, "when an RB&W man told us* he could speed up assembly of this precision screw-and-clamp unit and save us money besides. We figured we'd been doing O.K. the old way."

"What was the old way?" asked Mac, who'd recently started in at the shop.

"Well, it was a one-two-three operation. We used to machine the slotted-head screw for the clamp on that machine over there. Then we'd make a special collar, and fit it around the screw head to prevent the screw-driver from slipping out of the slot while the clamp was being applied or adjusted.

"What RB&W did was to cold-form the whole thing—screw, slot and collar—all in one piece. Wasn't an easy job, either—they had to strike a slot in the screw head and form the collar at the same time. Now we're saving one-third on our previous assembly costs—along with the price of the special collar."

Which proves that you can generally cut costs, if you look hard enough . . . even in such simple things as fasteners. It also underlines the creative approach to fastening problems you can expect from RB&W, as well as practical experience in designing and fabricating. If the fastener you need can't be supplied from our extensive stock, we'll study your assembly operation and make the right one for the job.

*Remember*—for any fastening operation, it's a smart move to call in RB&W. You can count on RB&W bolts, nuts, screws and rivets for uniform accuracy, dependability and physical properties. And you can also count on fast service from RB&W's strategically located plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Pittsburgh, Detroit, Chicago, Dallas, San Francisco. Sales agents at: Portland, Seattle. Distributors from coast to coast.

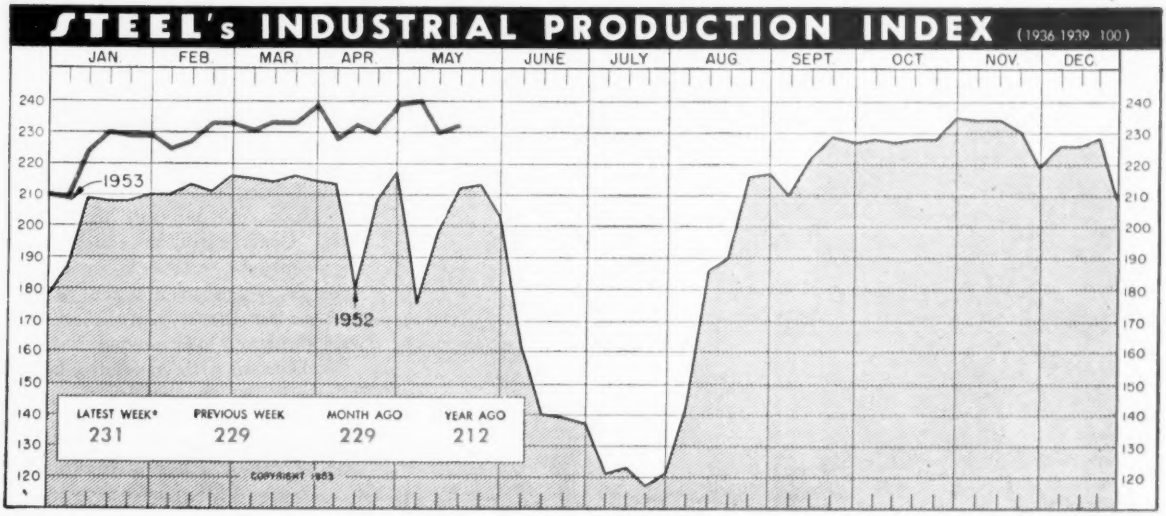
**RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY**

2.12

*George K. Garrett Co., Philadelphia, Pa.

**RB&W** 108 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

# The Business Trend




*Week ended May 16

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

**Industrial production shows recovery from slight decline. Contributing to the upturn are a slight rise in steel production and electricity output**

RECOVERY from a slight decline in industrial production marks the latest week. Reflecting this recovery, STEEL's industrial production index for the week ended May 16 rose 2 points to 231 per cent of the 1936-1939 average.

Sparking the upturn was a slight rise in steel production and electricity output. On the other hand, automobile outturn and freight car loadings eased downward.

The recovery mirrors the continuation of the fast pace of business in the first quarter when many desirable characteristics were revealed by the nation's economy. Then, supply, in general, balanced with demand. However, there are reports that supply is now outrunning demand in some products, notably major appliances for the home.

Reflecting the fast pace of business, the gross national product, the market value of the nation's output of goods and services, was at an annual rate of $361 billion in the first quarter of 1953, compared with $359 billion in the fourth quarter of 1952, the U. S. Office of Business Economics reports.

Outstanding among the developments in the first quarter was the $8.5 billion increase in the flow of goods to final use—to consumers, to fixed investment and to government. The flow of goods into inventories, which in the final quarter of 1952 accounted for some $8 billion of production at annual rates, dropped in the first quarter to less than $2 billion.

Most of the first-quarter increase in final use occurred in the civilian sectors of the economy, which accounted for $7.5 billion, or seven-eights, of the increase. The remaining $1 billion annual rate advance was in national security expenditures.

## Eyes Are on Auto Industry . . .

The automobile industry is one of those being watched closely. Much of the heavy demand on industry today comes from the automakers. At the beginning of this month, auto inventories averaged 12.8 cars per dealer. If they do not drop or if they gain, watch for a drop in output of steel and related products.

In the week ended May 16, production of passenger automobiles and trucks in the United States and Canada totaled 178,018 units, a slight decline from the preceding week's 179,621 units. This decline resulted from strikes in the industry, and would have been larger were it not for the valiant efforts of the producers to keep assembly lines rolling.

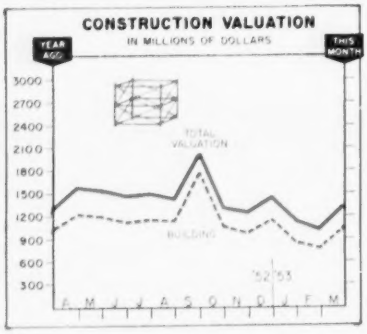
Despite shortages of manpower and materials, the 3 millionth automobile for this year was produced in the United States last week. This is nearly 900,000 units ahead of output for the corresponding period of last year, according to *Ward's Automotive Reports*.

## Steel at Fast Pace . . .

Spurred by the demands from the auto industry, steel producers continue to operate at slightly above capacity rates. In the week ended May 23, the yield was expected to be around 2,259,000 net tons of steel for ingots and castings.

This is an extension of the pace that produced a new production record for April. In that month, the outturn of steel for ingots and castings totaled 9,545,000 net tons, bringing the production for the first four months to a new record of 38,543,839 tons, the American Iron & Steel Institute reports.

Increases in steel price extras continue to spread through additional products and additional producers. However, there is little

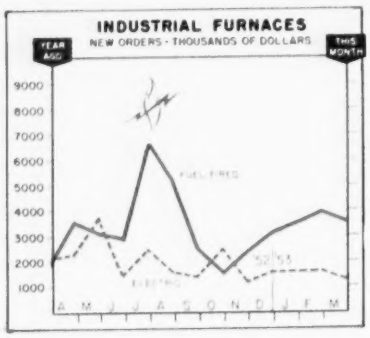



**Construction Valuation**

(37 States)—In Millions of Dollars

| | Total | | Building | |
|---|---|---|---|---|
| | 1953 | 1952 | 1953 | 1952 |
| Jan. | 1,075.9 | 902.1 | 867.0 | 695.4 |
| Feb. | 1,021.3 | 885.2 | 792.9 | 697.8 |
| Mar. | 1,347.5 | 1,321.3 | 1,054 | 1,056.0 |
| Apr. | ..... | 1,597.5 | ..... | 1,243.9 |
| May | ..... | 1,563.6 | ..... | 1,216.2 |
| June | ..... | 1,488.8 | ..... | 1,133.3 |
| July | ..... | 1,511.3 | ..... | 1,170.8 |
| Aug. | ..... | 1,438.7 | ..... | 1,147.5 |
| Sept. | ..... | 2,039.2 | ..... | 1,790.8 |
| Oct. | ..... | 1,310.1 | ..... | 1,072.8 |
| Nov. | ..... | 1,218.8 | ..... | 989.9 |
| Dec. | ..... | 1,467.4 | ..... | 1,147.7 |
| Total | ..... | 16,774.9 | ..... | 13,362.1 |

F. W. Dodge Corp.

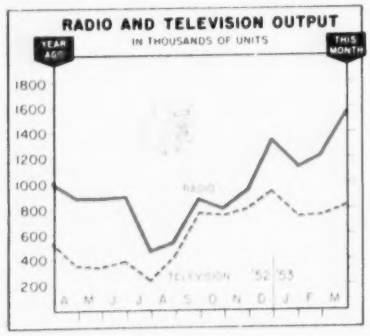



**Industrial Furnaces**

New Orders—Thousands of Dollars

| | Fuel Fired* | | Electric | |
|---|---|---|---|---|
| | 1953 | 1952 | 1953 | 1952 |
| Jan. | 3,540 | 3,379 | 1,655 | 2,856 |
| Feb. | 3,996 | 2,413 | 1,672 | 1,363 |
| Mar. | 3,607 | 1,813 | 1,301 | 2,100 |
| Apr. | ..... | 3,606 | ..... | 2,298 |
| May | ..... | 3,032 | ..... | 3,713 |
| June | ..... | 2,954 | ..... | 1,552 |
| July | ..... | 6,728 | ..... | 2,530 |
| Aug. | ..... | 5,259 | ..... | 1,626 |
| Sept. | ..... | 2,462 | ..... | 1,412 |
| Oct. | ..... | 1,507 | ..... | 2,459 |
| Nov. | ..... | 2,382 | ..... | 1,241 |
| Dec. | ..... | 3,235 | ..... | 1,634 |

*Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.

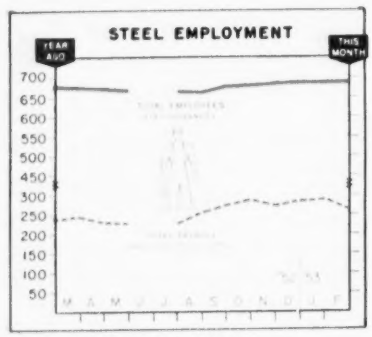



**Radio and Television Output**

Thousands of Units

| | Radio | | Television | |
|---|---|---|---|---|
| | 1953 | 1952 | 1953 | 1952 |
| Jan. | 1,093 | 632 | 719 | 405 |
| Feb. | 1,192 | 759 | 731 | 409 |
| Mar. | 1,549 | 976 | 810 | 511 |
| Apr. | ..... | 848 | ..... | 323 |
| May | ..... | 748 | ..... | 309 |
| June | ..... | 874 | ..... | 361 |
| July | ..... | 442 | ..... | 199 |
| Aug. | ..... | 544 | ..... | 398 |
| Sept. | ..... | 866 | ..... | 756 |
| Oct. | ..... | 772 | ..... | 724 |
| Nov. | ..... | 924 | ..... | 780 |
| Dec. | ..... | 1,325 | ..... | 921 |
| Total | ..... | 9,711 | ..... | 6,096 |

Radio-Television Mfrs. Assn.




**Steel Employment, Payrolls**

| | Employees in Thousands | | Payrolls in Millions | |
|---|---|---|---|---|
| | 1953 | 1952 | 1953 | 1952 |
| Jan. | 684 | 672 | $285.4 | $252.2 |
| Feb. | 685 | 674 | 261.3 | 234.9 |
| Mar. | ..... | 672 | ..... | 242.7 |
| Apr. | ..... | 670 | ..... | 225.6 |
| May | ..... | 662 | ..... | 223.1 |
| June | ..... | * | ..... | * |
| July | ..... | * | ..... | * |
| Aug. | ..... | 660 | ..... | 250.4 |
| Sept. | ..... | 674 | ..... | 269.4 |
| Oct. | ..... | 677 | ..... | 282.9 |
| Nov. | ..... | 680 | ..... | 269.7 |
| Dec. | ..... | 684 | ..... | 280.0 |

*Not available because of steel strike.
American Iron & Steel Institute.

Charts Copyright 1953 STEEL

**Issue Dates on other FACTS and FIGURES Published by STEEL**

| | | |
|---|---|---|
| Durable Goods ....May 4 | Ironers .....Apr. 13 | Refrigerators .....May 18 |
| Employ., Metalwk..May 4 | Machine Tools ....Apr. 27 | Steel Castings ....Apr. 20 |
| Fab. Struc. Steel...May 18 | Malleable Castings..Apr. 20 | Steel Forgings ....Apr. 20 |
| Foundry Equip. ...Apr. 27 | Prices, Consumer ...May 4 | Steel Shipments ...May 4 |
| Freight Cars .....May 11 | Prices, Wholesale...Apr. 13 | Vacuum Cleaners ..May 11 |
| Gear Sales .....May 18 | Pumps .....Apr. 6 | Wages, Metalwk. ..Apr. 27 |
| Gray Iron Castings..Apr. 20 | Ranges, Elec .....Apr. 13 | Washers .....May 11 |
| Indus. Production...Apr. 27 | Ranges, Gas .....May 18 | Water Heaters ....May 11 |

vocal opposition to the increases, except at the level of warehouse customers.

Any general increase in base prices of steel will await outcome of current wage negotiations between the United Steelworkers of America-CIO and the steel industry.

## Blame It on the Weather . . .

Electricity output continues to run around 12 per cent above last year. Contributing to the present high output has been inclement weather which over much of the nation has kept people indoors, with light and heat needed.

To keep up with the rising usage of electricity, the electric industry is still boosting its capacity. In March, the latest month for which capacity figures are available, the industry had a capacity of 83,167,417 kilowatts, compared with 76,339,161 a year earlier, according to the Edison Electric Institute.

## Slow Freight . . .

Freight car loadings eased off in the latest week, most of the decline being centered in miscellaneous loadings. In the week ended May 9, loadings totaled 765,411 cars. While this figure was 2.1 per cent below that for the preceding week it was a 6.3 per cent rise over the corresponding week of 1952.

## Price Index Marks Time . . .

Despite increases in price extras on steel, the all-commodity price index of the U. S. Bureau of Labor Statistics in the week ended May 12 remained stationary at 109.9 per cent of the 1947-1949 average. In addition to price increases on steel there were price rises on copper ingot and copper scrap. On the other hand, there were price reductions on crude rubber, cast iron scrap and tin.

## Easy Come, Easy Go . . .

Consumer spending in the early part of May continued to exceed the year-ago levels although the increase was not as large as in previous months, Dun & Bradstreet Inc. reports.

However, purchases of durable goods continued to exceed the simi-

## BAROMETERS OF BUSINESS

| | LATEST PERIOD* | PRIOR WEEK | YEAR AGO |
|---|---|---|---|
| **INDUSTRY** | | | |
| Steel Ingot Output (per cent of capacity)[2] | 100.5 | 100.0 | 101.0 |
| Electric Power Distributed (million kwhr) | 7,959 | 7,896 | 7,110 |
| Bituminous Coal Output (daily av.—1000 tons) | 1,468 | 1,458 | 1,326 |
| Petroleum Production (daily av.—1000 bbl) | 6,330[1] | 6,335 | 6,366 |
| Construction Volume (ENR—millions) | $282.2 | $252.6 | $284.6 |
| Automobile, Truck Output (Ward's—units) | 178,018 | 179,621 | 129,945 |
| **TRADE** | | | |
| Freight Car Loadings (unit—1000 cars) | 776[1] | 765 | 754 |
| Business Failures (Dun & Bradstreet, number) | 198 | 165 | 154 |
| Currency in Circulation (millions)[3] | $29,845 | $29,863 | $28,497 |
| Dept. Store Sales (changes from year ago)[3] | +9% | +2% | 0% |
| **FINANCE** | | | |
| Bank Clearings (Dun & Bradstreet, millions) | $16,282 | $18,386 | $15,681 |
| Federal Gross Debt (billions) | $265.7 | $265.6 | $258.6 |
| Bond Volume, NYSE (millions) | $14.5 | $14.0 | $14.6 |
| Stocks Sales, NYSE (thousands of shares) | 5,631 | 6,254 | 4,863 |
| Loans and Investments (billions)[4] | $76.2 | $76.3 | $73.1 |
| United States Gov't. Obligations Held (billions)[4] | $29.2 | $29.2 | $31.4 |
| **PRICES** | | | |
| STEEL's Weighted Finished Steel Price Index[5] | 181.31 | 181.31 | 171.92 |
| STEEL's Nonferrous Metal Price Index[6] | 221.8 | 221.5 | 232.4 |
| All Commodities[7] | 109.9 | 109.9 | 111.8 |
| All Commodities Other Than Farm and Foods[7] | 113.4 | 113.4 | 113.3 |

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100

lar 1952 levels by a larger percentage than did purchases of nondurables.

### Building a Record . . .

Contracts awarded in the first 20 weeks of this year for heavy construction totaled $6.1 billion, an all-time high, and 20 per cent above the corresponding period of last year, *Engineering News-Record* reports.

Private mass housing and commercial building contracts continue to set new records this year. Industrial building contracts have been running substantially under the weekly average for the early part of 1952.

### Everybody's Busy . . .

Newspapers still carry heavy volumes of "help wanted" advertisements. This is a continuation of the trend in April when employment was at an all-time high for that month and unemployment was at a postwar minimum.

The Commerce department estimates total civilian employment in the week ended Apr. 11 at 61,228,000. Unemployed were 1,582,000 persons. Nonagricultural employment dropped by half a million between March and April, chiefly because of a reduction in trade following Easter. Agricultural employment continued its seasonal climb.

### Dark Picture for Coal . . .

Bituminous coal production is running behind that of last year. Through May 9, output totaled 157,410,000 net tons, compared with 184,683,000 tons in the comparable period of last year, the National Coal Association reports.

### Trends Fore and Aft . . .

Cash dividend payments by corporations issuing public reports totaled $561 million in April, 4 per cent above the $540 million paid out in the same month a year ago, says the U. S. Office of Business Economics . . . Factories shipped 6714 truck trailers during March. This exceeded production, which totaled 6684 units . . . March shipments of steel shipping barrels, drums and pails were 16 per cent above those of February . . . Factory sales of mechanical stokers in March totaled 879 units, a slight increase over the number sold in February but a 20 per cent decrease from sales in March, 1952 . . . Factory shipments of domestic water systems in March totaled 60,368 units, valued at $6 million. This is an increase of 20 per cent, both in number and value of shipments, over February.


THERE'S NO DOUBT ABOUT L&I REAMERS

It's easy to choose the right reamer with the NEW Reamer Selector

It's easy to get complete specifications of all L&I Reamers in the NEW illustrated catalog

It's easy to find the exact price to you in the new illustrated NET Price List

It's easy to get complete data on reamer selection, specifications and prices, too. Mail the coupon NOW!

L&I The Reamer Specialists

LAVALLEE & IDE, INC.
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____ New Catalogs ____ Net Price Lists.

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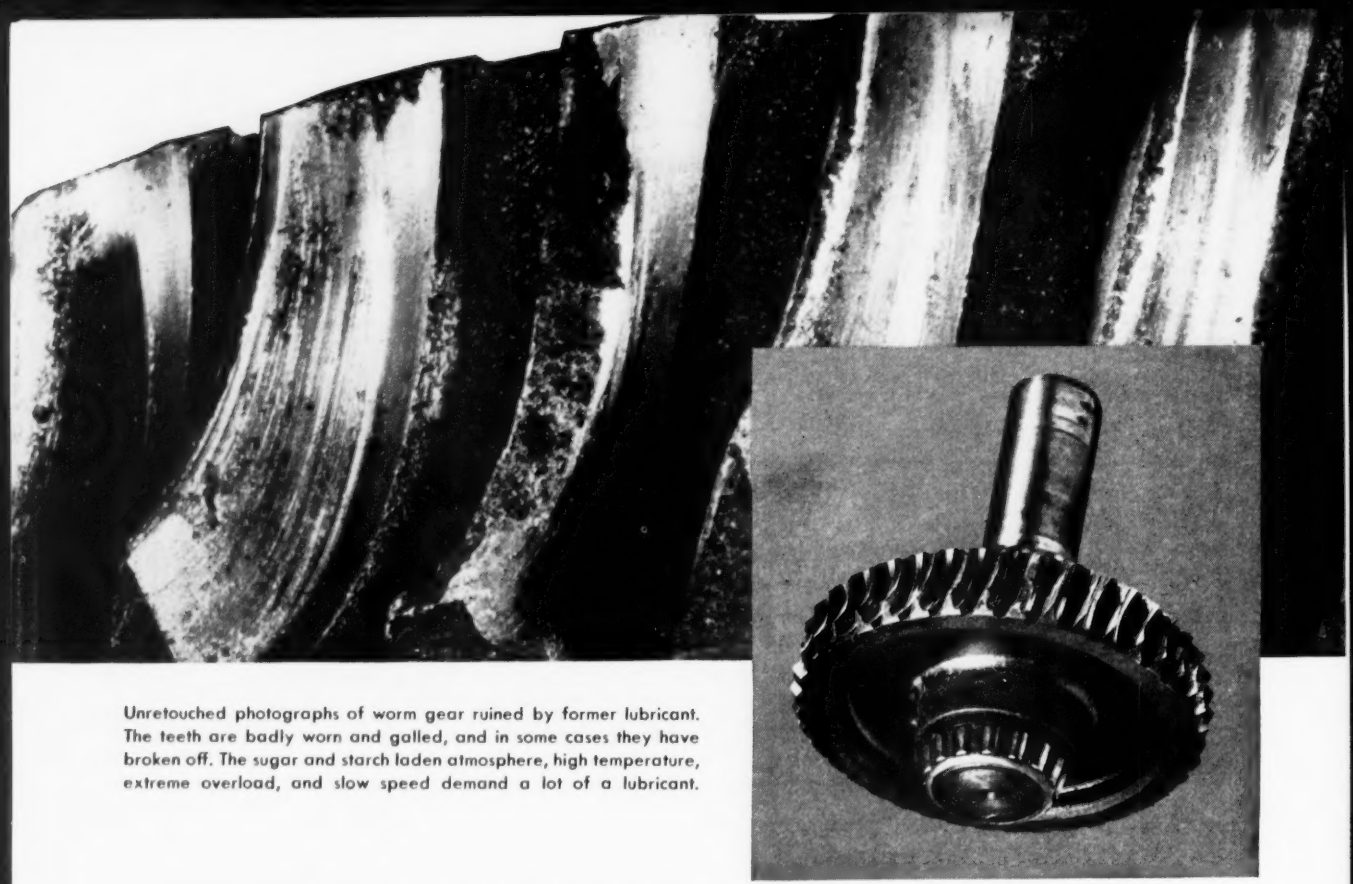


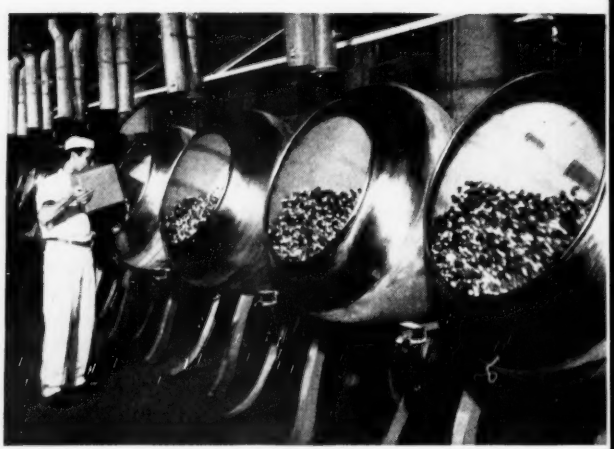
Unretouched photographs of worm gear ruined by former lubricant. The teeth are badly worn and galled, and in some cases they have broken off. The sugar and starch laden atmosphere, high temperature, extreme overload, and slow speed demand a lot of a lubricant.

# SUNEP ELIMINATES FAILURE OF SLOW-SPEED WORM GEARS

To help satisfy America's sweet tooth, Leaf Brands, Inc. resorted to a 70% overload on its revolving candy pans. This weight, plus slow speed, sugar and starch-laden atmosphere, and surrounding high temperatures, resulted in an average of 450 worm gear unit failures in one year. The lubricant could not take it.

After a test of a number of extreme pressure lubricants Sunep was selected. Because of damage caused by the former product, some units broke down during the first months following the change-over. But in the last 5½ months there hasn't been a single failure. Far less Sunep has been required, and records show an overall saving of over $20,000 in the year it has been in use.

Send for our new booklet "Sunep"—it will not obligate you. SUN OIL COMPANY, Philadelphia 3, Pa., Dept. S-5



These revolving candy pans operate at 30 rpm. Sunep keeps them turning in spite of 70 percent overload.

**INDUSTRIAL PRODUCTS DEPARTMENT**

**SUN OIL COMPANY** SUNOCO®

PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL

**Lubricating Oils and Greases for Gears and Bearings • Refrigeration Oils • Motor Oils • Way Lubricants • Hydraulic Oils • Pressure System Greases • Cutting Oils • Rubber and Textile Process Aids • Waxes • Petrochemicals**

# Men of Industry

J. F. CARLAND
*. . . executive post, Chandeysson Electric*

T. E. DONOHUE
*. . . Cleco sales manager*

OSCAR J. ELLERTSON
*. . . heads Pioneer Engineering Wks.*

**Chandeysson Electric Co.**, St. Louis, elected **J. F. Carland** executive vice president and general manager. **T. A. Leonhardt** was elected vice president-plant superintendent, and **William E. Schwarz** vice president, engineering and plant manager.

**A. Ward Jenks** was appointed Detroit district manager, **Pittsburgh Crucible Division**, Crucible Steel Co. of America. He succeeds **W. W. Noble**, retired. Mr. Jenks joined Crucible in 1944 as sales manager, forging blanks department.

**Fairmount Steel Corp.**, Philadelphia, appointed **J. Harold Campion** assistant plant superintendent and **M. Masters** chief of estimating, process engineering and production planning.

**Morris B. Pendleton**, president, Plomb Tool Co., was elected a director of **United States Spring & Bumper Co.**, Los Angeles.

**William C. Jordan** was appointed executive vice president, general manager and a director of **Hiller Helicopters**, Palo Alto, Calif. He is a former president of Curtiss-Wright Corp.

**Roy W. Elliott**, former director of purchases at Cessna Aircraft Co., joins **Langley Corp.**, San Diego, Calif., as director of aircraft sales.

At **Cleco Pneumatic Tool Division**, Houston, Reed Roller Bit Co., **T. E. Donohue** was made Cleco sales manager. He succeeds **W. J. Vossbrinck**, resigned to form his own firm. Mr. Donohue has been assistant sales manager since joining the division in 1948.

**J. B. Buckley** of the New Bedford, Mass., division and **Alexander N. Aird** of the Baltimore division were elected vice presidents of **Revere Copper & Brass Inc.** **Louis G. Glesmann**, assistant general manager, Rome, N. Y., division, is now vice president in charge of manufacturing for Revere with headquarters in New York. Other changes at the Rome division include **J. A. Phillips** as works manager, **Carl O. Windrath** assistant works manager, **F. C. Ludden** supervisor of methods, **L. A. Jacobs** treasurer and **Charles Getty** assistant treasurer.

**Herbert Schwartz** was appointed sales manager, **American Silver Co.**, Flushing, N. Y. Before joining the company as a sales engineer, he was associate control engineer for Burndy Engineering Co.

**Steven P. J. Wood** was elected president, **Warner Electric Brake & Clutch Co.**, Beloit, Wis. He was named general sales manager in 1947 and vice president in 1949.

**Oscar J. Ellertson** is the new president of **Pioneer Engineering Works Inc.**, Minneapolis, a subsidiary of Poor & Co., Chicago, and was also elected to the board of directors. He succeeds **Melvin Ovestrud**, retired, but who continues with the company as engineering consultant. Mr. Ellertson became a vice president in 1951 and since 1952 has been in charge of production.

**Arthur H. Branstad**, works manager of the Trentwood, Wash., plant of **Kaiser Aluminum & Chemical Corp.**, transferred to the Oakland, Calif., headquarters of the firm and was promoted to manager, fabricating plant operations. He assists **Stanley B. White** who is in charge of the fabricating and reduction divisions. He is replaced at Trentwood by **David Mayers**.

**Emerson Electric Mfg. Co.**, St. Louis, elected **William S. Snead** president and chairman of the board and **John A. Driy** executive vice president. These changes follow the death of **Oscar C. Schmitt**.

**Chrysler Corp.**, Detroit, promoted five presidents of divisions to the rank of vice president of the corporation. They are: **Robert T. Keller**, president of Chrysler Marine & Industrial Engine Division and general manager of tank manufacturing operations; **John P. Mans-**

**field,** president, Plymouth Division; **W. C. Newberg,** president, Dodge Division; **E. C. Quinn,** president, Chrysler Division and **L. Irving Woolson,** president, DeSoto Division. All continue in their divisional posts. **Frank W. Misch** was made comptroller of the corporation, a post relinquished by **George W. Troost,** vice president and director, in assuming other responsibilities.

**Edward M. Synan** joins **Tower Iron Works,** Providence, R. I., to handle sales development for its Dighton Aircraft Division. He has been with NPA for the last two years as advisor for the industry advisory committees in the Iron & Steel, Construction, and Building Materials divisions.

**International Business Machines Corp.,** New York, appointed **Herbert R. Keith** manager of its newly created contract relations department. He was formerly assistant sales manager, electric accounting machine division.

**William C. Ford** was elected a vice president of **Ford Motor Co.,** Dearborn, Mich. A director of the company since 1948, he has been manager of special product operations.

**Humbert C. Cozza Jr.,** who joined **Lewis Machinery Division,** Blaw-Knox Co., Pittsburgh, last July, was promoted to manager of industrial engineering. **John A. Deer** was made manager of production planning and control. Starting with the division in 1941, he has been production manager since 1947.

**James A. Roemer** and **John J. Kraus** were elected vice presidents, **Sharon Steel Corp.,** Sharon, Pa. Mr. Roemer has been operating head of Niles Rolling Mill Division since its inception in 1935, and is also president of Mallory-Sharon Titanium Corp. Mr. Kraus served as vice president of sales, Detroit Seamless Steel Tubes Division and later, general manager, Detroit Tube & Steel Division, as well as district manager of the Detroit district sales office of Sharon.

**Larkin L. Blake** and **Theodore G. Lyston,** graduates of **Minneapolis-Honeywell Regulator Co.'s** industrial instruments school at Philadelphia, were assigned to the company's San Francisco industrial sales engineering staff.

F. N. FLOYD

ARTHUR G. MIDDLETON

. . . *United Engineers & Constructors v. p's.*

**United Engineers & Constructors Inc.,** Philadelphia, elected **F. N. Floyd** and **Arthur G. Middleton** vice presidents and directors. Both Mr. Floyd, engineering manager, and Mr. Middleton, head of estimating, have been with United Engineers since 1928. **John N. Rolston** also was elected vice president.

**E. B. Gates** was assigned by Union Hardware & Metal Co., Los Angeles, to duties of full-time assistant to William Dudley, **DeWalt Inc.,** district manager for southern California.

**Peter A. Frasse & Co. Inc.,** New York, announces appointments in its management group: **John D. Drummond,** Philadelphia, was made assistant vice president; **Leslie N. Stetson,** Buffalo, assistant vice president; **John M. Brion,** New York, assistant vice president and assistant treasurer; **Lester E. Brion Jr.,** New York, assistant vice president and assistant secretary; and **Frank M. Daughety,** New York, assistant vice president.

**Archer W. Richards** was elected chairman of **Designers for Industry Inc.,** Cleveland. **James E. Burnett** was made vice president-contracting, and also heads up advertising and promotion. **Ervin J. Osterhus** becomes vice president of mechanical development and **J. P. Teas** was made secretary.

**Carl H. Gerlach** was appointed staff engineer at **American Society for Metals** headquarters in Cleveland. He has a background of 13 years of design, product development and manufacturing experience in the mechanical and metalworking industries.

**Ralph K. Gottshall,** executive vice president, was elected president, **Atlas Powder Co.,** Wilmington, Del. He also was elected chairman of the executive committee. He succeeds **Isaac Fogg,** now chairman of the board.

**Albert E. Forster** was elected president, **Hercules Powder Co.,** Wilmington, Del., succeeding **Charles A. Higgins,** who continues as chairman of the board. Mr. Forster also was elected chairman of the executive committee.

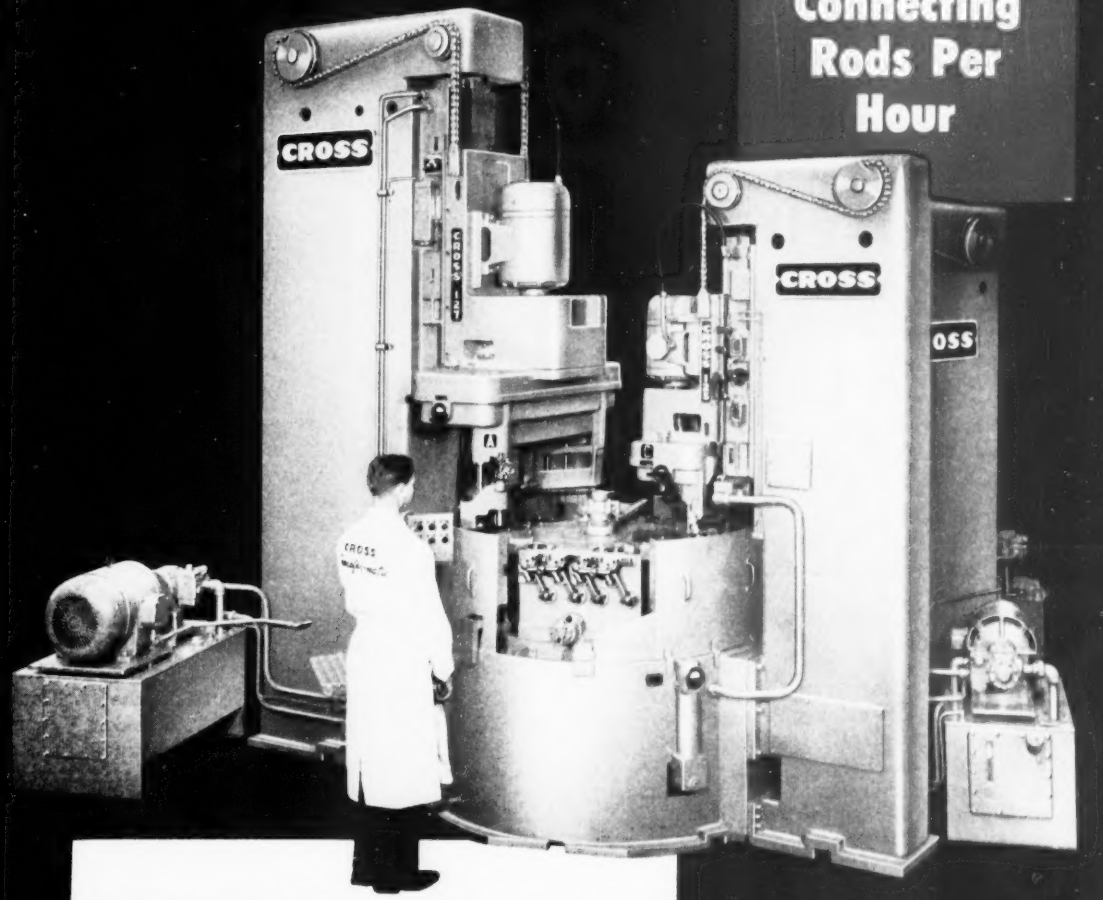
**Inland Steel Products Co.,** Milwaukee, a division of Inland Steel Co., appointed **J. S. Oakley** general manager, manufacturing department, to succeed **J. L. Yates,** resigned. **F. E. Wood,** former manager of purchasing, becomes assistant general manager of the department, and is succeeded by **T. C. Ray.**

**Carl H. Morken,** works manager, **Kennedy Valve Mfg. Co.,** Elmira, N. Y., was appointed vice president in charge of manufacturing. **T. S. Turkington,** comptroller, was named secretary.

**Frank F. Argust** was appointed superintendent and **Dean B. Valentine** assistant superintendent, industrial engineering, **Colorado Fuel & Iron Corp.,** Pueblo, Colo. **Morton E.**

*Another Special by Cross*

**Mills, Drills 600 Connecting Rods Per Hour**




★ Drills stepped oil hole and mills lock slot of 600 connecting rods per hour at 100% efficiency.

★ Fluid motor driven index table.

★ Five stations—one for loading, one for milling and three for drilling.

★ Hydraulically operated work holding fixtures.

★ Pre-set cutting tools.

★ Other features: Hydraulic feed and rapid traverse; hardened and ground ways, J.I.C. standard construction.

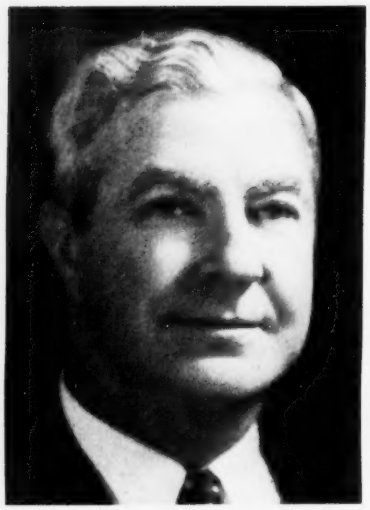
*Established 1898*

THE CROSS CO.

DETROIT 7, MICHIGAN

*Special* MACHINE TOOLS

**W. W. REEVES**
*. . . Fedders-Quigan div. sales mgr.*



**T. F. PATTON**
*. . . asst. president at Republic Steel*

**CLARENCE W. FABEL**
*. . . Atkins Saw Div. chief metallurgist*

**Weichsel** was made manager, industrial engineering, with headquarters in Buffalo.

**W. W. Reeves,** assistant sales manager, automotive division, **Fedders-Quigan Corp.,** Buffalo, was named division sales manager to succeed **August Ihde**, retired to serve the company as a consultant.

**Fitzgibbons Boiler Co.** named **Arthur J. Raymo** works manager of its Oswego, N. Y., plant. He was with Baldwin-Lima-Hamilton Corp., most recently serving as assistant to the divisional vice president.

**R. F. Baird** was appointed vice president and general manager, **Aircraft Metal Forming Co.,** Burbank, Calif. **Seibly S. Buffum** was made sales manager.

**Russell L. Lawson** was elected executive vice president, **Central Scientific Co.,** Chicago.

**John B. Breckenridge,** a New York attorney, was named assistant to the president of **Bristol Brass Corp.,** Bristol, Conn. He assumes his duties next month.

**T. F. Patton,** vice president and general counsel, **Republic Steel Corp.,** Cleveland, was elected to the newly created position of assistant president and first vice president. **Charles W. Kennedy** was appointed assistant district sales manager, Houston sales ofice.

New president of **Universal Mfg. Corp.,** Zelienople, Pa., is **J. A. Kirkpatrick.** He was formerly vice president and general manager. In addition he also was made president of the jointly-managed American Tubular Elevator Co. Other appointments at Universal include **Bernard W. Carbeau** as vice president and **Robert L. Carbeau,** treasurer, as assistant to the president.

**H. B. Sallada** was appointed assistant general manager, **Chance Vought Aircraft Division,** United Aircraft Corp., Dallas. A retired Navy admiral, he joined Chance Vought last August as executive assistant to the general manager.

**Lt. Gen. Elwood R. Quesada,** USAF (ret.) is a newly elected member of the board of **Lockheed Aircraft Corp.,** Burbank, Calif.

**Clarence W. Fabel** was appointed chief metallurgist of **Atkins Saw Division,** Indianapolis, Borg-Warner Corp. He formerly was metallurgist and liaison engineer of Simonds Saw & Steel Co.

**Norris B. McFarlane** was named sales manager and assistant general manager, **Pittsburgh Metallurgical Co.,** Niagara Falls, N. Y. He formerly held the position of assistant to the president. **Thomas C. Ford** was appointed assistant sales manager. He was Cleveland district sales manager.

**John B. Florance** was appointed chief engineer, **James H. Knapp Co.,** Los Angeles.

**J. Allan Greenland** was named sales manager, San Francisco district office, **De Laval Turbine Pacific Co. Donald T. Bixby** was made sales manager, Seattle district office.

**United Engineering & Foundry Co.** appointed **William R. Jenkins** as sales representative in the Youngstown district. He succeeds the late **Walter B. Jenkins.**

## *OBITUARIES...*

**James W. McLaughlin,** 62, vice president, **Union Carbide & Carbon Corp.,** New York, died May 15.

**William M. Whitney,** 90, president and treasurer, **Baxter D. Whitney & Son Inc.,** Winchendon, Mass., died May 1.

**Clyde B. Dakin,** 62, manager of General Motors Corp.'s **Oldsmobile** forge plant, Lansing Mich., died May 4.

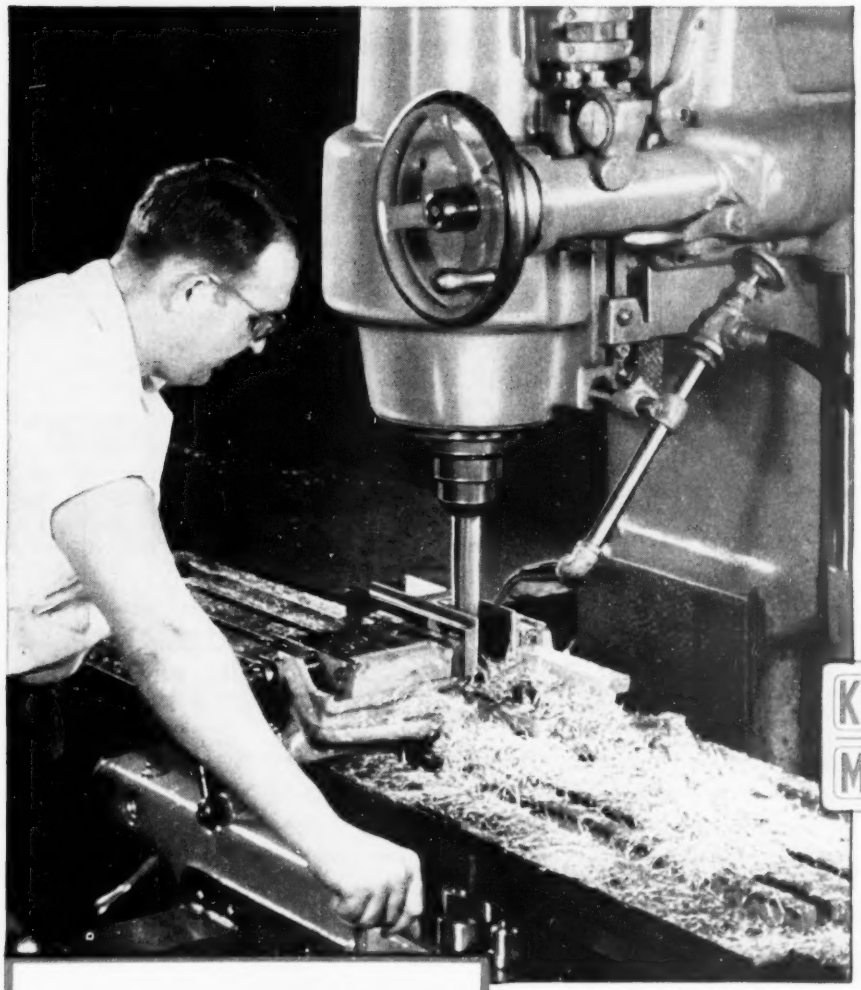
**Frank G. Schwenzer,** 68, head of **Schwenzer Tool & Die Co. Inc.,** Buffalo, since 1929, died May 12.

**Francis S. Denneen,** cofounder of **Ohio Crankshaft Co.,** Cleveland, and a developer of electronic heat treatment of metals, died May 10.

**Walter P. Zagar,** 65, founder of **Zagar Tool Inc.,** Cleveland, died Apr. 23.

**F. W. Bischoff,** 61, of **L. G. Schlecht & Sons Inc.,** Chicago, died May 16.

# Load, engage feed and unload — that's all there is to it with this CH miller!



**HERE ARE THE JOB FACTS**

**Co.:** Aeroaffiliates, Inc., Fort Worth, Texas

**Machine:** 10 hp, No. 3 Model CH Vertical Milling Machine

**Depth of cut:** 2 inches

**Feed rate:** 6⅜ ipm

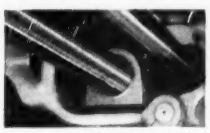
**Cutter:** 4-lip HSS 1¼ inch end mill

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

**CH Milling Machine features that helped increase output — cut cost per piece**

Greater operating convenience through Mono-Lever control (optional) for table feed and rapid traverse.

Greater Cutting Efficiency through spindle mounted flywheel, (optional), running with three bearing support.



Smoother Feed Performance through large dia. heavy-duty table feed screw that affords greater bearing contact. All models are equipped with a back-lash eliminator.

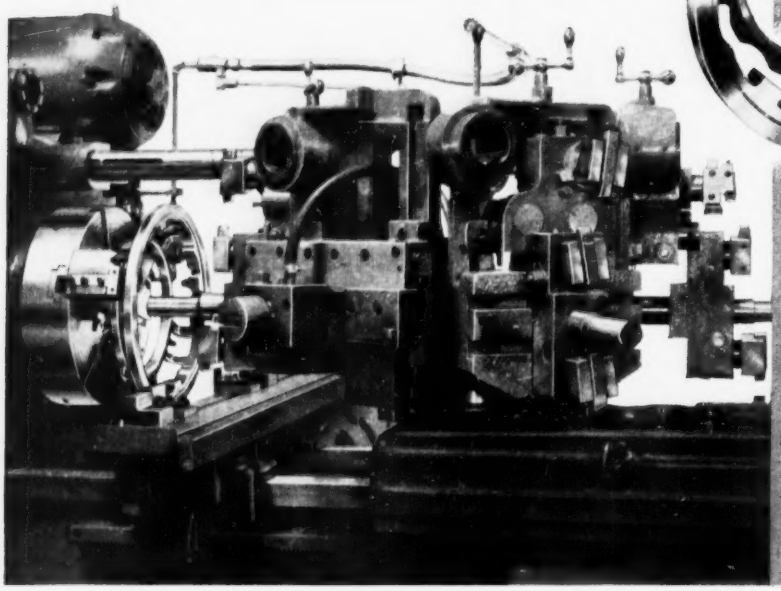
**Aeroaffiliates of Texas select Kearney & Trecker 10 hp No. 3 Model CH Vertical Milling Machine with *Mono-Lever and Automatic Cycle Table Control*, to speed milling of aircraft parts and reduce operator fatigue!**

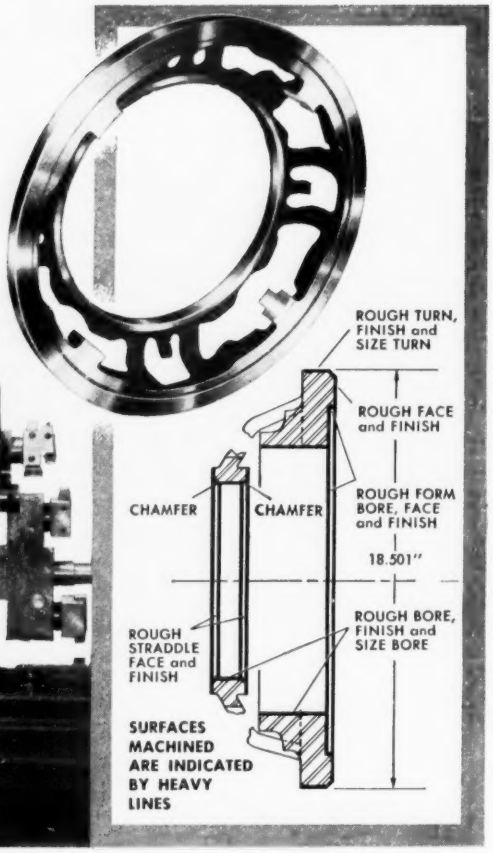
TO finish-mill aluminum vertical beam fittings, this manufacturer put production on an almost automatic basis without sacrificing accuracy. He's handling the job on a 10 hp, No. 3 CH Vertical Milling Machine equipped with Mono-Lever and Automatic Cycle Table Control.

Now, after the original setup, all the operator does is load the machine, engage the feed and unload. Production is up, accuracy is maintained and operating conditions have been greatly improved due to the reduction in operator fatigue.

Check this great CH line of machines for yourself. See how you, too, can cut costs, increase productivity, improve safety, get better finished products. Contact our representative or write Kearney & Trecker Corp., 6784 West National Avenue, Milwaukee 14, Wisconsin.

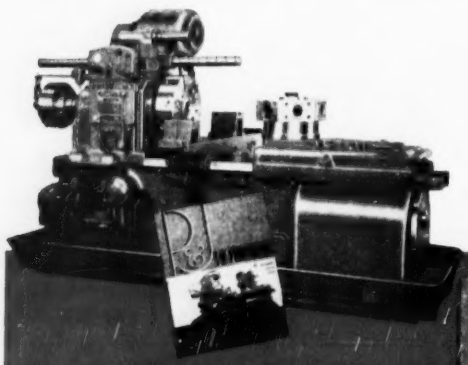
# DO IT BETTER,
# DO IT *AUTOMATICALLY*




ROUGH TURN, FINISH and SIZE TURN
ROUGH FACE and FINISH
CHAMFER
CHAMFER
ROUGH FORM BORE, FACE and FINISH
18.501"
ROUGH BORE, FINISH and SIZE BORE
ROUGH STRADDLE FACE and FINISH
SURFACES MACHINED ARE INDICATED BY HEAVY LINES

## ...do it on a 5-DELX POWER-FLEX Automatic Turret Lathe with P&J Tooling

For example, the steel casting shown above required *twenty* separate machining operations all of which were accurately performed in a single, fully-automatic cycle . . . thanks to P&J Tooling on a P&J 5-DELX Power-Flex. Set for most effective speeds and feeds for each cut, P&J Automatics faithfully repeat the same cycle for every work piece without the chance of operator error. Operator fatigue is greatly reduced; one man can easily tend several machines allowing maximum opportunities for divided labor costs.



You can take guesswork out of your production picture . . . be sure of better work, lower costs and fewer rejects . . . when you do it automatically. Let today's outstanding production team — P&J Automatics plus P&J Tooling go to work for you. Send today for your copy of the 5-DELX Power-Flex Bulletin No. 131 — or ask P&J Tool Engineers to submit time and money-saving recommendations based on your own prints or sample parts.

WRITE DIRECT OR CONTACT YOUR NEAREST PRATT & WHITNEY BRANCH OFFICE
BIRMINGHAM • BOSTON • CHICAGO
CINCINNATI • CLEVELAND • DETROIT
LOS ANGELES • NEW YORK • PHILADELPHIA
PITTSBURGH • ROCHESTER • ST. LOUIS
SAN FRANCISCO
EXPORT DEPT., PAWTUCKET, R. I.
AGENTS: DALLAS, THE STANCO CO.; HOUSTON, WESSENDORFF, MELMS & CO.

**POTTER & JOHNSTON CO.**
PAWTUCKET, RHODE ISLAND
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P&J

## Closure Makers Unite

**Ball Bros. consolidates Aridor Co. with General Cap & Closure Division of Jaques Mfg. Co.**

BALL BROS. Co. Inc., Muncie, Ind., consolidated its closure manufacturing subsidiary, Aridor Co., with General Cap & Closure Division, Jaques Mfg. Co., both of Chicago.

This consolidation will make the Ball subsidiary one of the principal suppliers of commercial screw and lug-type caps and closures in the nation. The Ball company, a leading manufacturer of glass containers, also is an important supplier of metal products other than closures, mechanical rubber goods, decorative plastics, paper and corrugated shipping containers.

A. V. Smith, Aridor's general manager, holds the same position in the combined operation. Harry F. McCracken, formerly sales manager at General Cap, is manager of both Aridor and General Cap sales activities.

### Weber Heads Steel Joist Group

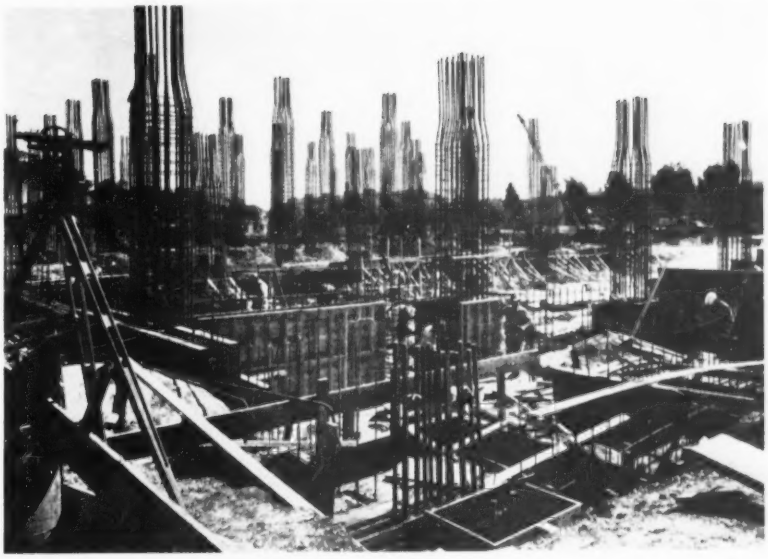
Officers of Steel Joist Institute, Washington, were re-elected. They are: President, A. Carl Weber, director of research and engineering sales, Laclede Steel Co., St. Louis; vice president, James D. Maitland, president, Colorado Builders Supply Co., Denver; secretary - treasurer, C. H. Luedeman, Steel Joist Institute.

### Canada To Get $1 Million Plant

American Brake Shoe Co., New York, announces establishment of a plant at Calera, Ala., for production of an undisclosed product. W. S. Fraule, operating assistant to the president, says the plant will represent an investment of about $1 million.

### Clark Buys Ross Carrier Co.

Clark Equipment Co., Buchanan, Mich., manufacturer of materials-handling industrial trucks and heavy automotive transmissions, formally acquired Ross Carrier Co., Benton Harbor, Mich. Michigan Power Shovel Co., a Ross subsidiary, was included in the transfer. Ross manufacturing operations in their present locations will be continued, producing excavating and crane equipment for earth-moving and construction operations and straddle carriers.



**Forest of Bars To Support Building**

Reinforcing bars in columns 32 feet high will help support, a $6.7 million electronics building at Mare Island naval shipyard, Vallejo, Calif. About 2200 tons of reinforcing steel, which is being rolled and fabricated at Bethlehem Pacific Coast Steel Corp.'s South San Francisco plant, will be required in entire building

### Magnesium Warehouse Opened

Dow Chemical Co., Midland, Mich., appointed A. R. Purdy Co. Inc., Lyndhurst, N. J., to warehouse magnesium mill products. Dow's only other warehouser is Reliance Steel Co., Los Angeles.

### Holly Mfg. Co. Expanding

Holly Mfg. Co., Los Angeles, is constructing an addition to its factory at 875 S. Arroyo Parkway, Pasadena, Calif., for the manufacture of warm air floor furnaces, wall heaters, and aircraft starters. According to J. S. Johnson, president, the addition is expected to be completed by August.

### Copes-Vulcan Appoints Agent

Copes - Vulcan Division, Continental Foundry & Machine Co., Erie, Pa., appointed Alan Moore & Co., Cleveland, as representative in that territory for its products, including the new Copes-Vulcan boiler controls with instrumentation by Taylor.

### Newman Sets Up U. S. Office

A. J. Newman, president, Newman Industries (America) Inc., established headquarters at 43 Broad St., New York, where a staff of engineers will be located. The parent firm, a large manufacturer of electrical motors in England, is arranging for nationwide distribution in the United States.

### Bearings Maker Moves Office

Miniature Precision Bearings Inc., Keene, N. H., moved its New York sales office to larger quarters at 19 W. 44th St. The company appointed as distributors of its products: Benson Engineering Co., Wichita, Kans., and Dallas; Engineering Specialties, Cincinnati; Iowa Bearings Co. Inc., Davenport, Iowa.

### Builds Sintering Plant in Brazil

Work has been started on the Greenawalt sintering plant, consisting of two 50-square-foot units with complete crushing and screening plant which is part of the expansion program of Companhia Ferro Brasiliero, S. A., Minas Gerais, Brazil. It is expected that this part of the program will be

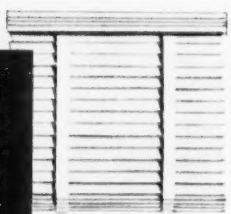
CUSTOM-MADE FOR YOUR PRODUCTS by FOLLANSBEE

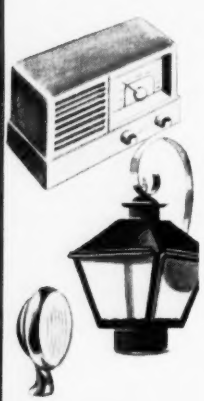
The finish, temper and uniform tolerance of Follansbee Cold Rolled Strip make it a highly desirable steel for productioneering operations on your presses.

That's why manufacturers of precision parts specify Follansbee Cold Rolled Strip for all types of stamped and formed products.

Follansbee custom-quality Cold Rolled Strip can be delivered from the mill directly to you providing a continuous supply of uniform steel from coils to your automatics, regardless of forming operations involved.

Consult your trained Follansbee Steel representative. He will be glad to discuss your fabricating problems with you.





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COLD ROLLED STRIP · STAINLESS TERNE ROLL ROOFING
POLISHED BLUE SHEETS AND COILS
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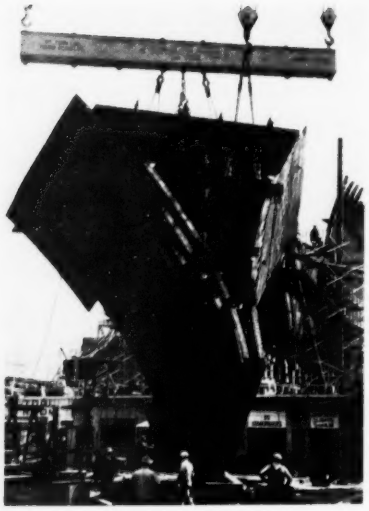


**70-Ton Ship Section**

This 70-ton prefabricated section of a bow assembly was welded to the hull of a cargo vessel being constructed in Bethlehem's San Francisco yard. Section is 39 feet 6 inches high by 42 feet wide at the top and 22 feet deep

in operation within the next year. John E. Greenawalt, metallurgical and chemical engineer, has offices at 135 E. 42nd St., New York.

### Pioneer Electronics To Build

Pioneer Electronics Corp., Los Angeles, will construct a factory at 2235 Carmelina St., West Los Angeles, Calif., for the manufacture of cathode ray tubes, special purpose tubes, and vacuum switches. Lawrence M. Perrish, president, says the firm will occupy the new facility by Aug. 1.

### Valve Maker Appoints Agent

Kieley & Mueller Inc., North Bergen, N. J., manufacturer of diaphragm control valves, appointed Steam Plant Equipment Co., Milwaukee, as its representative in sections of Wisconsin and Michigan.

### Fabricating Firm To Expand

Binghamton Steel & Fabricating Co. Inc., Binghamton, N.Y., plans a $100,000 expansion program which will double the plant's capacity. First step in the program will be erection of a 16,000 sq ft fabricating building to be used as a welding and assembly area. It is

# *just the right* VERTICAL *drive for every job!*

On agitator tanks—on mixing vats—on overhead conveyors—on beaters—wherever the application calls for a vertical drive, you will find just the right one for your needs in the wide range of drives available from Foote Bros. Capacities up to 264 h.p. Ratios from 4⅛ to 1 up to 4118 to 1.

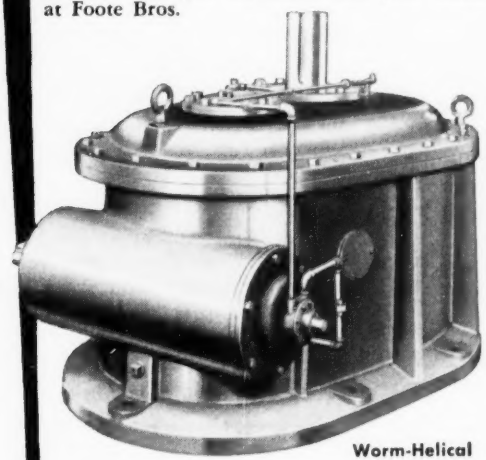
***Line-O-Power Drives***—compact, efficient drives with Duti-Rated Gears available in standard models or in extended shaft design where long unsupported output shafts are encountered.

***Foote Bros.-Louis Allis Gearmotors*** in vertical design.

***Hygrade Worm Gear Drives*** standard design or Hytop design for long, unsupported output shaft extensions.

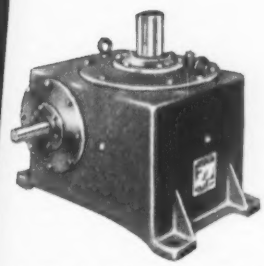
***Worm-Helical Gear Drives.*** Big, husky units of worm and helical gear design.

Whatever your requirements in vertical drives, you will find just the one to suit your needs at Foote Bros.



Worm-Helical Gear Drive

Foote Bros.-Louis Allis Gearmotor Extended Shaft



Hygrade Worm Gear Drive Standard Shaft

Hygrade Worm Gear Drive Extended Shaft

Line-O-Power Drive Standard Shaft

Line-O-Power Drive Extended Shaft

FOOTE BROS.

*Better Power Transmission Through Better Gears*

**FOOTE BROS. GEAR AND MACHINE CORPORATION**
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Chicago 9, Illinois

Please send me information on the following vertical drives:

- ☐ Line-O-Power Drives
- ☐ Foote Bros.-Louis Allis Gearmotors
- ☐ Hygrade Drives
- ☐ Worm-Helical Gear Drives

Name .....

Company .....

Address .....

Position .....

City ..... Zone ..... State .....

**Weld it once and done**

*no cracks, no porosity*

Lightweight, tough, high tensile steels have made it possible for truckers to haul heavier loads with less dead weight—a decided economy.

No less important in saving time and money is the use of low hydrogen electrodes to weld these steels. When you weld low alloy high tensile steels—whether your requirements are tough or easy—Arcos Low Hydrogen Electrodes will consistently produce sound welds . . . welds that are free of cracks or porosity. There is no reworking of such welds—no chipping or re-welding to add more time to the job. The ability of Arcos weld metal to stand up in tough service—such as the strain on truck bodies of heavy loads or the impact of sudden stops and starts—is the result of high standard quality controls in the manufacture of Arcos electrodes.

Send for the free Arcos booklet, "The ABC's of Welding High Tensile Steels". Arcos Corp., 1500 South 50th Street, Philadelphia 43, Penna.

| ARCOS GRADE | A. W. S. SPEC. |
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| Tensilend 70 | E7016 |
| Tensilend 100 | E10016 |
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| Manganend 2M | E10015 |
| Nickend 2 | E8015 |
| Chromend 1M | E8015 |
| Chromend 2M | E9015 |

WELD WITH ARCOS

LOW HYDROGEN ELECTRODES

Wide World

## Four-Wheel Steering

A four-wheel dual steering tandem front axle installed on a truck enables it to carry a 30 per cent heavier payload. Four wheels steer the truck and are activated by the Pitman arm, seen above in the foreground. The long cylinder at right of the wheel is the hydraulic power steering unit

scheduled for completion in the fall.

### Atlas Mineral Products Expands

Atlas Mineral Products Co., Mertztown, Pa., enlarged its production facilities for reinforced polyester fume exhaust systems.

### Power Products Appoints Agent

Auto & Aero Supply Co. Inc., Cincinnati, was named Ohio valley area central distributor for Power Products Corp., Grafton, Wis., gasoline engine producer.

### Press Manufacturer Moves

M & N Hydraulic Press Co. moved into its newly-built plant at 780 Route No. 3, Clifton, N. J. The firm had been known as M & N Machine Tool Works.

### Ford Opens Canadian Plant

Ford Motor Co. of Canada Ltd. has gone into production at its plant in Oakville, Ont., less than a year after erection of the first steel at the plant. Production will gradually be increased as the Windsor, Ont., assembly plant is shut down. By the end of the summer, the new

plant is expected to be turning out about 300 units a day.

### Pressman Toy Corp. Moves

Pressman Toy Corp. moved its factory to larger quarters at 11 43rd St., Bush Terminal, Brooklyn, N. Y.

### Big Ditch To Be Repaired

FIRST major overhaul of the Panama Canal since it was built 40 years ago has begun. A quarter-million-dollar order for new motor controls for the locks was received by Federal Electric Products Co., Newark, N. J., representing part of the first phase of a ten-year repair and modernization program. First phase, to be completed by 1956, will cost about $1.5 million.

Delivery of 398 motor controls by Federal will begin this month, continuing at a rate of about 30 units a week through June, July and August. All component parts of the complex mechanisms have been produced, and assembly is now under way. The motors range in horsepower from 7½ to 70.

Unique manufacturing requirements for this equipment are necessitated by specifications for tropical use. All wire insulation and other parts subject to deterioration must be protected against "attack by insects, especially cockroaches and termites," and fungus-proofed with special shellac.

### Yale & Towne Appoints Agent

Yale & Towne Mfg. Co., Philadelphia, appointed Materials Handling Products Corp., Syracuse, N. Y., as distributor of its industrial truck products.

### Anchor Post Expands in West

Anchor Post Products Inc., Baltimore, is constructing a building at Washington and Whittier boule-

(*Please turn to Page* 100)

*When you want*
*to* ***lick corrosion***
*for longer equipment life*

Getting good corrosion resistance starts with a base metal of desirable characteristics. However, maximum equipment life can be assured only when the welds possess the same corrosion resistance as the base metal.

ARCOS STAINLESS ELECTRODES are designed to deliver the results you need on *all* your welding jobs. Regardless of the requirements, there's a wide selection to provide the best suited electrode for every application. Because each is backed by Arcos quality controls, you have complete assurance of physically, chemically, and metallurgically sound weld metal. That means longer-lasting welds . . . less time and fewer dollars for maintenance. Write for your free copy of "What Electrode Would You Use?"

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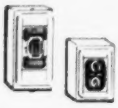
**WELD WITH**
**ARCOS**
**STAINLESS ELECTRODES**

# GENERAL-PURPOSE CONTROL

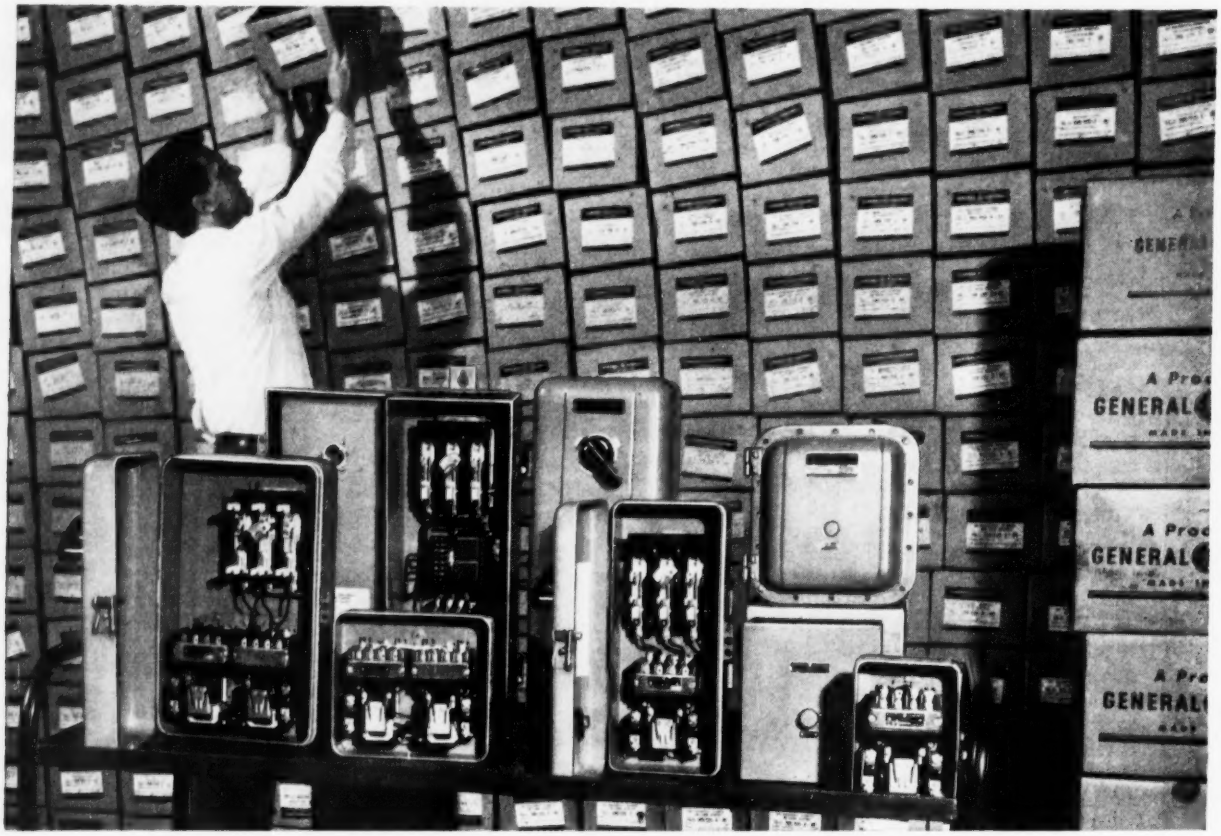
Fhp motor starter


1—7½ hp manual motor starters

A-c magnetic motor starter

Combination motor starter

Reversing motor starter




# Meet Any Motor-Starting Application With A Dependable G-E Magnetic Starter

## Thousands of Forms Available

No matter what your requirements, you can get a G-E starter to fit your application. Hundreds of variations of across-the-line, combination, reversing and multi-speed starters are available for a-c motors.

Every form pictured above has the same basic contactor that has proved its superiority again and again in severe industrial applications. You can choose from literally thousands of combinations of the contactor, shown at the right, and its accessory components, to get the best control for your particular motor application.

**EXTRA INTERLOCK CONTACTS**—as many as four on sizes 0 and 1, three on sizes 2 and 3—can be added to the standard starter for your application.

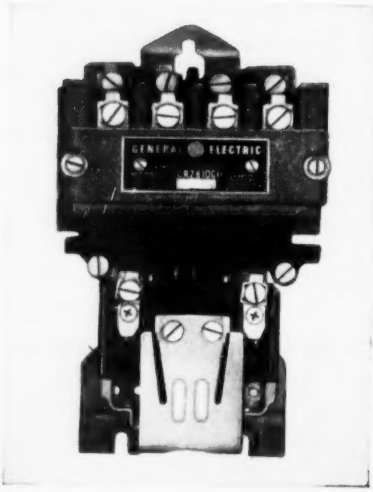
**CONTROL TRANSFORMERS** for operator protection, extra overload relay for motor protection, and control relays are available as standard components.

**EITHER START-STOP** push buttons or Hand-Off-Auto selector switches can be mounted in the starter cover.

**ENCLOSURES** for every motor application include general purpose, watertight, dust-tight, semidust-tight, and explosion-proof. Enclosures that meet JIC specifications are also available.

**ALL STARTERS** have plenty of wiring space. Contacts, coils and overload relays can be removed quickly, conveniently.

Contact your nearest G-E apparatus sales office or authorized agent or distributor for your starters. Write for Bulletin GEC-880 for more details.



# INFORMATION FOR PRODUCTION AND MAINTENANCE

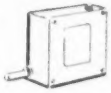
Reduced voltage starter

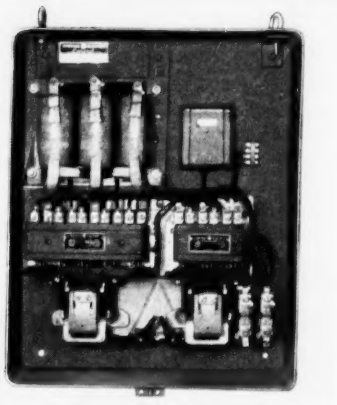
Heavy and standard-duty push-button stations

General-purpose relay

A-c and d-c solenoids

Roller-lever type limit switch

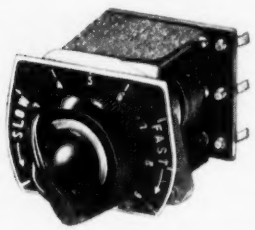

Rotating-type limit switch



## G-E REDUCED-VOLTAGE MAGNETIC STARTER SOLVES POWER PROBLEMS

When load limitations prohibit motor starting at full voltage, this autotransformer-type starter controls and protects the operation of motor-driven pumps, conveyors, compressors, blowers, etc.

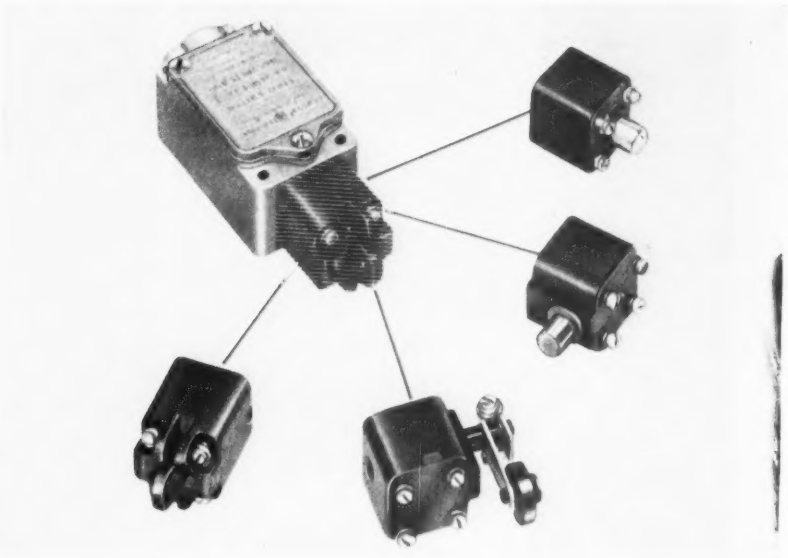
Available in air-break and oil-immersed designs, this hard-working starter for motors up to 250 hp utilizes the most modern materials and methods to give exactly the kind of operation you require for years to come.




## NEW OILTIGHT POTENTIOMETER FOR CONTROL OF VARIABLE-SPEED MOTORS

This compact unit is part of the new G-E line of oiltight push buttons for use on a-c or d-c. It can be mounted in the standard G-E stations or enclosures or directly on the machine to be controlled. Ask for Bulletin GEA-5779 on the entire line of G-E oiltight push buttons.

## SMALL G-E LIMIT SWITCH HAS FOUR INTERCHANGEABLE OPERATING HEADS FOR VARIETY OF APPLICATIONS



The basic contact unit—only slightly over two inches high—can be obtained with one of four different types of heads: roller lever, side pushrod, top pushrod, and roller pushrod. Case is oiltight—a gasketed cover keeps dirt and lubricating oils away from the contacts.

Little movement is required to operate it—18 degrees with a one-inch radius arm, 5/64 inch for the plunger type. Use this switch on machine tools, battery truck lift platforms, on small machines as a pilot device, and as a safety interlock on enclosing cases. Operates on a-c or d-c. Double-throw snap-action contact is easily accessible for wiring, and there is adequate room within the cast aluminum case for connecting to terminals, which are extra large. Bulletin GEA-5707.

## NEW DUST-TIGHT/LINT-TIGHT G-E MANUAL MOTOR STARTER

**For Motors Up to 7½ Hp**

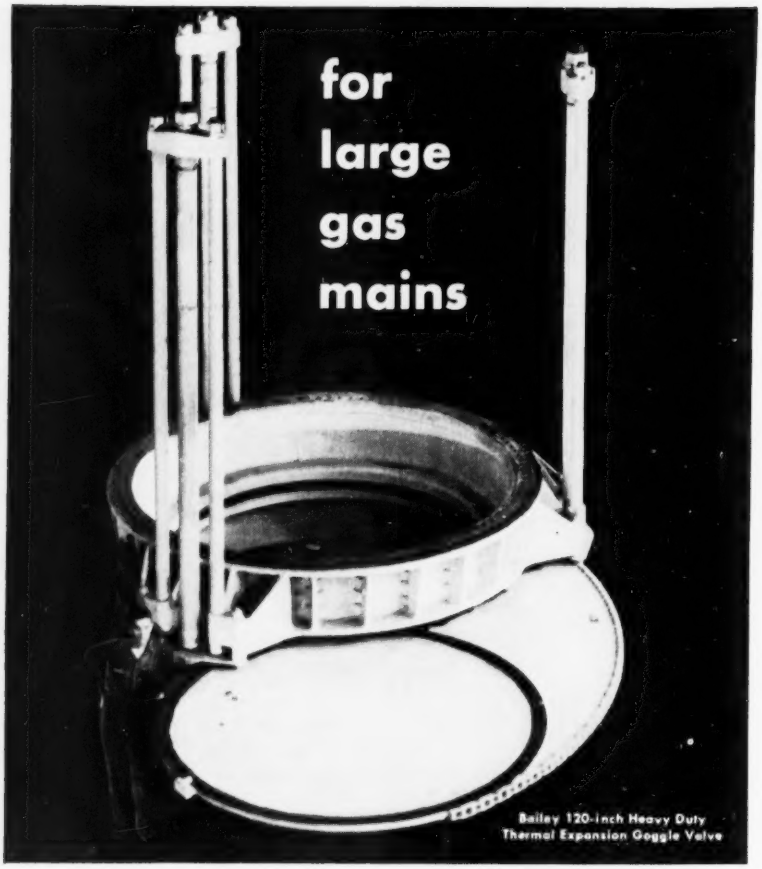
Listed by Underwriters' Laboratories and Factory Mutual, this starter for motors up to 7½ horsepower is completely dust tight. Special gaskets and cover fastenings keep dust from contacts—reduce the fire hazard. Two-, three- and four-pole forms have bi-metallic overload relays with front-connected heaters. Switch lever moves to neutral position on overload, is vibration resistant.

Switch interior can be reversed in the enclosure for either top or bottom feed, and ON-OFF nameplate can be easily reversed.

**For more information contact your nearest G-E representative, agent, or distributor, or write Section B730-45, General Electric Co., Schenectady 5, N. Y.**

GENERAL ELECTRIC

# Newest Safety




Bailey ENGINEERS

heavy duty
**GOGGLE VALVES**
THERMAL EXPANSION TYPE

Now produced in a new heavy duty model, these valves operate by linear expansion and contraction of three sets of tubes spaced around the rigid steel flange. Steam passed into the tubes causes them to expand, thus separating the flanges and freeing the goggle plate. When steam is removed, contraction closes the flanges against the goggle plate. Available in diameters of 36" to 120".

WILLIAM M. Bailey COMPANY
ENGINEERS
LEADERSHIP THROUGH QUALITY
1221 BANKSVILLE ROAD PITTSBURGH 16, PA.


(*Continued from Page* 97)

vards, Whittier, Calif., for the manufacture of wire fences, posts, and fluid heat oil burners.

### Dominion Foundries To Build

Dominion Foundries & Steel Ltd., Hamilton, Ont., has nearly completed plans for its new mill. The major item in the $4 million project will be a four-high 60-in. wide reversing hot strip mill. Lighter gage strip will be produced in the new installation, resulting in higher production from the cold reduction mills.

### Cook Bros. Relocates Facilities

Cook Bros. Equipment Co., manufacturer of specialized trucks, crane carriers, trailers and drive units, completed its expansion program and relocated facilities at 3334 San Fernando Rd., Los Angeles.

### Gets Republic Kitchen Agency

Berger Mfg. Division, Republic Steel Corp., Canton, O., appointed Kitchen Equipment Distributing Corp., St. Louis, as a distributor of its Republic Steel kitchens.

### Machinery Firm Moves Plant

J. W. Greer Co., manufacturer of bakers', confectioners' and industrial machinery, moved its offices and manufacturing departments to its new plant at Main and Eames streets, Wilmington, Mass.

### Materials Handling Firm Expands

Koehring Southern Co. opened its new manufacturing plant at Chattanooga, Tenn. This company is a subsidiary of Koehring Co., Milwaukee, which makes construction and materials handling equipment.

### Offers Course in Purchasing

A new management curriculum for the professional education of purchasing executives was announced by Dr. Pearce Davis, director, Department of Business & Economics, Illinois Institute of Technology, Chicago. The program was developed through the research and recommendation of the Pur-

(*Please turn to Page* 103)

# Best way to support a home

Modern home builders are using steel more and more extensively in order to cut construction costs and make homes more liveable.

One example is the use of economical steel beams as structural supports, permitting longer spans without danger of sagging. This results in greater open areas, free of obstructions.

In many other ways steel is essential to the modern home. Steel pipe for plumbing, heating and ventilating. Steel for cabinets, hardware, casements, ornamental work, lath, studs, doors. In fact, it requires over 4 tons of steel to build the average modern 6 room home.

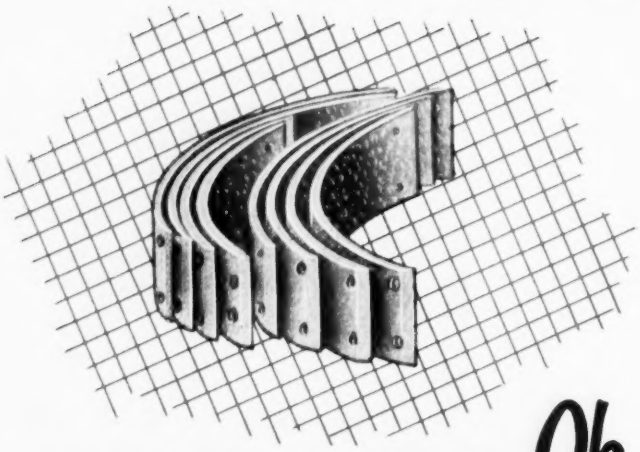
Through its diversified line of products, Kaiser Steel is helping to meet the needs of western builders . . . providing a nearby, dependable source for the West's great construction industry.

***It's good business to do business with***

# Kaiser Steel

***built to serve the West***

**PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES** • plates • continuous weld pipe • electric weld pipe • tin plate • hot rolled strip • hot rolled sheet alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-products
For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**



## BETTER WIRE—BETTER BRAKE LINING? Oh, YES!

for Automobiles . . . Trucks . . . Motorcycles

Farm Implements . . . Hoists . . . Tractors

Earth Moving and other Industrial Machinery

# REYNOLDS WIRE protects performance

Who makes the brake lining? The answer is important to automotive, agricultural and other industrial users.

But who makes the wire cloth that reinforces the brake lining?

That, too, is important. To the makers of the brake lining. To those who build brake lining into their motor cars, trucks, buses, farm implements, contractors' and other kinds of machinery. And to the users of those machines.

Because the better the wire, the more dependable and the more uniformly effective the braking. And it prolongs the wear and adds to the service life of the lining.

There is no better reinforcing agent than Reynolds Wire Cloth—for all compounds, plastics, rubbers, and building materials.

For the automotive and all other "precise specification" industries, Reynolds is made to meet special requirements—by engineers with 50 years' specialized know-how, using the most modern equipment and methods. Consultation without obligation.

**REYNOLDS WIRE DIVISION,** NATIONAL-STANDARD CO.
DIXON, ILLINOIS

*Divisions of National-Standard Co.*

| | |
|---|---|
| ATHENIA STEEL...*Clifton, N. J.* | Flat, High Carbon, Cold Rolled Spring Steel |
| NATIONAL-STANDARD...*Niles, Mich.* | Tire Wire, Fabricated Braids and Tape |
| WAGNER LITHO MACHINERY...*Jersey City, N. J.* | Metal Decorating Equipment |
| WORCESTER WIRE WORKS...*Worcester, Mass.* | Round and Shaped Steel Wire, Small Sizes |

NS NATIONAL-STANDARD Company NILES, MICHIGAN

(*Continued from Page* 100)
chasing Agents Association of Chicago. To encourage development of the new curriculum, the association has established two four-year full-tuition scholarships to be awarded by a joint committee of the Chicago association and Illinois Tech.

## Pangborn Enlarges Facilities

Pangborn Corp., Hagerstown, Md., completed an addition to its production facilities. Importance of materials handling in the structure, designed for the production of taller automatic blast cleaning equipment, is indicated by the expenditure of $50,000 for truck loading docks out of the total $300,000 cost of the building.

## Instrument Firm Changes Hands

William Miller Corp., Pasadena, Calif., producer of scientific instruments, etc., has been acquired by Transformer Engineers Group, that city.

## Ohio Hoist To Be Dissolved

Ohio Hoist & Mfg. Co., Lisbon, O., discontinued operations as a result of a union attempt to organize employees. The firm is being dissolved.

## Solar To Expand Wakonda Plant

Solar Aircraft Co., San Diego, Calif., plans a $2 million expansion of its recently built Wakonda plant in Des Moines, Iowa. The present 300,000 sq ft plant will be enlarged with a 156,000 sq ft manufacturing addition and a 60,000 sq ft office and engineering building. Work is scheduled for completion on the manufacturing addition late this year; on the office building, next spring. The project will provide additional space for manufacturing jet engine parts.

## Miller Buys Valve Manufacturer

Miller Printing Machinery Co., Pittsburgh, purchased Kerotest Mfg. Co., that city, manufacturer of brass and steel valves. New officers of Kerotest are: R. B. Tullis, president; A. A. Saul and W. G. Young, vice presidents; W. G. Swaney, vice president and secretary; D. E. Edwards, treasurer and controller.

## Babcock & Wilcox Opens Office

Babcock & Wilcox Co., New York, opened an engineering office in Miami, Fla., under the management of J. E. V. Dingemans and W. H. Barrere. Two previously opened offices in that state are in St. Petersburg and Tampa.

## Westinghouse Withdraws Line

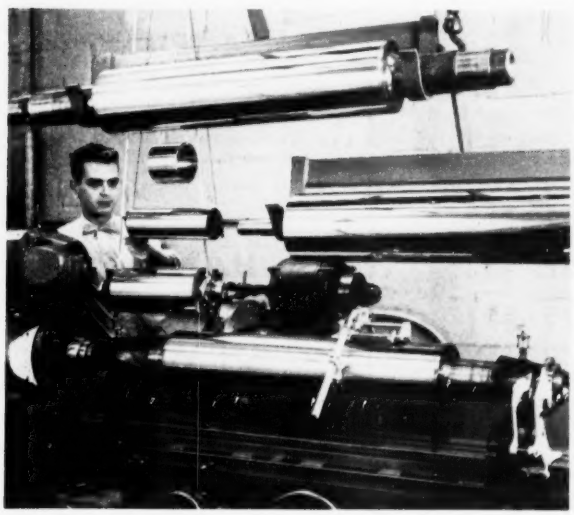
Westinghouse Electric Corp., Pittsburgh, has left the industrial stoker manufacturing field. Arrangements have been made for renewal parts and stoker service to be supplied by Detroit Stoker Co., Monroe, Mich. The agreement does not include the sale of Westinghouse's plant facilities at Attica, N. Y. The company will continue to operate the stoker manufacturing plant and foundry until all contracts for complete stokers currently on the books are fulfilled. Future plans for the Attica plant have not been formulated.

## Weldwire Appoints Distributor

Weldwire Co. Inc., Philadelphia, appointed Theger Co., 2518 Drexel Dr., Houston, as distributor of its welding products in that territory.

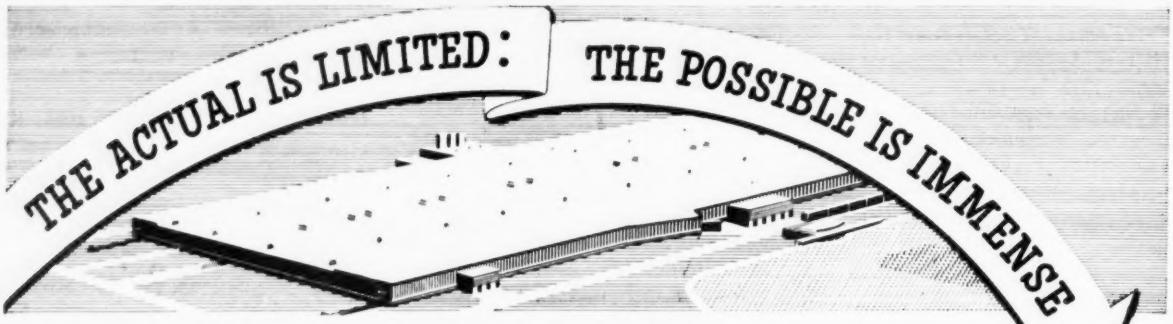
## Ebert Electronics Moves Plant

Ebert Electronics Co. moved its plant to 212-26 Jamaica Ave., Queens Village, Long Island, N. Y. The company, manufacturer of mercury relays and special components for both the electrical and electronic industries, more than tripled its former facilities.



## Du Pont Engineers and Craftsmen Seek Perfection

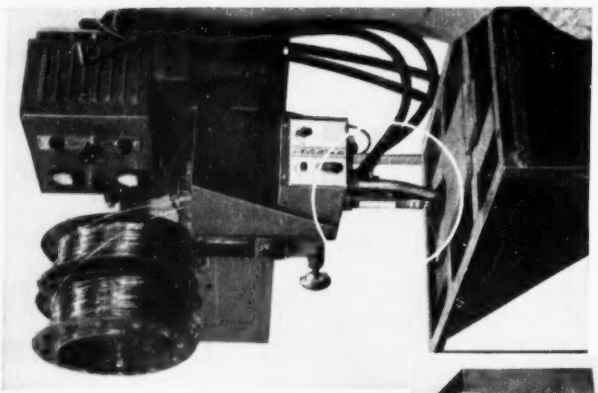
Since modern technology requires an increasing degree of precision, the laboratories of Du Pont's engineering department stress perfection in developing new products. Their annual budget exceeds $4 million. A roll, like those shown above, left, requires services for three weeks of a skilled technician working under a research engineer. The "perfectly ground" wheel being examined by a craftsman, above right, is result of 3 years' work by workers in the laboratories

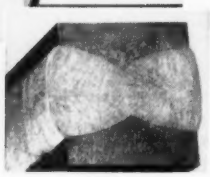



NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

© LE Co. 1953

# "TWINARC'S" FASTER, LOWER COST WELDING BOOSTS SHOP EFFICIENCY





IT is now possible to realize savings up to 35% in the cost of automatic welding with Lincoln's new "TWINARC". Welds have deeper penetration, greater uniformity . . . and are produced at *speeds 50% higher* than possible with single electrode automatic welding.

Reports from code welding fabricators indicate quality superior to conventional automatic processes.

With "TWINARC", welding currents up to 1200 amps are concentrated on two small diameter electrodes (Fig. 1). These electrodes can be set in line with the work for tandem welding to attain maximum penetration at high speed. For welding thin material or assemblies with poor fitup the "TWINARC" head may be rotated in any position to 90 degrees across the joint to spread the arc, reducing the danger of burning through.

"TWINARC" welding is only one of many new Lincoln developments designed to cut your costs. Have your representative survey your needs and recommend latest Lincoln techniques to speed welding, to simplify your operations and save money.

**Fig. 2. Automatic Lincolnweld LAF-2** *with new "TWINARC" attachment. "TWINARC" replaces original single electrode jaws. Operates with same single controls. Inset shows butt weld in 1-½" plate with single pass on each side with "TWINARC". Welding speed is 38% faster than possible with single electrode.*

## INCREASES WELDING SPEEDS 50% AND HIGHER! TO CUT YOUR COSTS

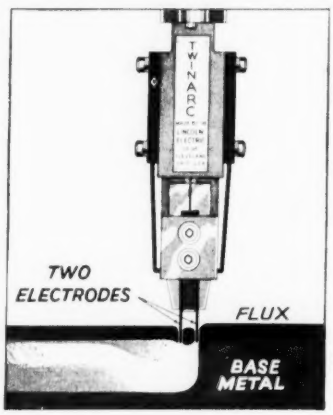



**Fig. 1. New Lincoln "TWINARC"...** *feeds two continuous electrodes simultaneously for faster, more efficient "hidden arc" welding in granular flux.*

*Results... utilizes currents up to 1200 amps, produces deeper penetration, higher quality welds, at lower cost.*

## HANDLES A WIDER RANGE OF WORK

ANOTHER LINCOLN FIRST

**GET THE FACTS** — *Bulletin on "TWINARC" welding giving latest speeds and procedures is available by writing on your letterhead to Dept. 1605.*

## THE LINCOLN ELECTRIC COMPANY

**CLEVELAND 17, OHIO**

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

# Buy Your Way To Lower Costs

FROM 40 to 75 cents of the sales dollar goes for purchasing materials, components and services. The proportion, varying from company to company and industry to industry, averages around 50 cents.

Considering that only from 5 to 9 cents are available for profit after all charges, it is clear efficient purchasing can spell the difference between red and black ink in financial statements.

**Still Growing**—But despite the tremendous rise in prestige of industrial procurement, it has not yet attained full stature in business administration. In many organizations it still lacks equality of standing with production, engineering, sales and finance in the management team.

In some respects this reflects resistance to change, a failing all too common to human nature. It certainly is not expressive of enlightened management thinking, and especially so today when new purchasing concepts are demanded as a requisite of profitable operations.

**Warped View**—Many industrialists, and purchasing men themselves for that matter, fail to comprehend procurement in any light other than that of a relatively routine function — necessary, but largely incidental to production performance.

"What are we, actually?" asks the director of purchases of a large steel company addressing an industrial purchasers' meeting.

Why such puzzlement among the buying fraternity as to their place and importance of function in business administration, you ask?

Partly, it stems from management's failure to demonstrate full appreciation of the scope of the purchaser's role in our mass production economy. Also, it derives from the limitations of the purchasing men themselves.

**Emotional Hangover**—In a way it reflects a sort of inferiority complex in the purchasing profession dating from earlier times when procurement was chiefly a service function in the production process. It is an emotional hangover from the days when industrial buying largely was pursued on a more-or-less hit-or-miss basis under direction of faithful, but often ill-equipped employees who simply did the bidding of the boss, usually the owner.

Life was more simple and easy-going in those days. At least business was conducted at a more leisurely pace and on a more personal level. Administration was less complex. Capital investment and volume were small based on present-day standards. Operations were limited and were largely localized, as were markets.

Management, operating in an entirely different economic climate, wasn't burdened with the manifold economic and social problems which encumber the conduct of business today. In a sense, it was less professional, and while competition was intense, often cut-throat, laissez-faire policies permitted profits to slip away through inefficient, uneconomical methods and practices.

In such circumstances supply

**GOOD WILL** is an intangible asset of incalculable worth in procuring industrial supplies. Often, especially during periods of shortage or emergency, it is the difference between purchasing success and failure. Consequently, cultivation of amicable vendor relations should be high on the "must" list of every foresighted purchasing agent.

Good supplier relations don't just happen. They must be fostered continuously, and especially in those little common courtesies and amenities which contribute so much to friendliness and understanding in buyer-seller dealings. You can work up a check list for good vendor relations as long as your arm.

The "Welcome" folder, shown here, is a minor but cogent convenience that stimulates harmonious relations with business callers. Increasingly widespread use confirms their merit in acquainting vendors with the companies they are calling upon, with their products, and their top purchasing personnel. Usually, these attractive, though not elaborate, booklets, describe the company, list its products, and provide a directory of those to see and where to see them.

procurement was largely a routine clerical operation. Often the owner served as his own purchasing agent and there was none to chide him if he blundered in buying decisions. Employment of purchasing experts and trained personnel was given scarcely a thought.

**Buying In The Dark**—As pointed out recently by H. W. Christensen, president, National Association of Purchasing Agents, buying in the early days of the century was performed with little knowledge of markets, without adequate price records, knowledge of supply sources, or consideration of other factors which must be evaluated in reaching intelligent buying decisions.

The purchasing function, of course, has come a long way since those "good old days". Ever since Henry Ford demonstrated the logic of the mass production idea in association with low prices and high wages, beginning just prior to World War I, industrial procurement has risen steadily in prestige and stature.

Ford's demonstration of the practicability of mass production generated a revolutionary concept of industrial operations which has since wrought a spectacular metamorphosis in the nation's economy.

**Evolution**—The mass production idea was not new with Ford. Manufacturers used the assembly line to some extent in pre-Civil War times. Cyrus McCormick used it in his reaper factory in the 1850s. Overhead conveyors were used for transporting materials long before the turn of the century.

What Ford did back in 1913 was to bring together into his assembly line operations all the ideas of those before him, such as those of Henry M. Leland, who demonstrated the practicability of close machining of interchangeable parts that would fit with absolute precision, and Frederick Taylor, whose management

***Comprehensive specifications lend to understanding between buyer and seller.***

studies had shown that through careful planning, steps and motion could be saved in the manufacturing processes.

Other manufacturers had similar ideas with respect to assembly line production. But Ford carried the idea further than any of his contemporaries. He extended the philosophy of "mass" to prices and wages, lowering the former and raising the latter on the principle that markets would be thus broadened for products of all kinds, including automobiles.

**Revolutionary Policies** — Ford's revolutionary wage and price policies were considered cockeyed by most industrialists of the time, quite a furore being kicked up in business circles throughout the country over the ideas advanced.

But while Ford's ideas on mass production and markets have undergone some modification since those early days, he demonstrated convincingly what has since become one of the basic principles of modern industrial society: That mass production lowers costs, in turn permitting lower prices, which, in company with high income by masses of ordinary people, broadens markets for products and services of every description.

The mass production concept brought with it radical changes in the corporate structure and conduct of business.

The one-man or family-owned shop has become a rarity. In its stead we have corporations owned by thousands of stockholders, employing still more thousands of workers, and doing volume business running into millions for even the smallest. Even small-scale business is a far cry from that of early in the century.

Under impact of the mass production technique on an ever-widening scale, business administration has become increasingly complex. In the face of mounting difficulties of procurement, manufacturing and distribution, management has been compelled to effect radical adjustments in its organization and its thinking.

**Organization Planning**—Increasingly, it has resorted to organization planning of its multitudinous activities in attaining smoothly functioning, economical, efficient operations. Even the smallest company, in keeping pace competitively, has had to give consideration to organization planning.

In no area of administration has such planning been afforded greater opportunity for service than in purchasing. Haphazard buying is unthinkable in large-scale, continuous operations. Consequently, it is not surprising that purchasing has risen steadily in standing in the management team, notably the past 20 years, and especially in the larger corporate units where procurement has attained top administrative status.

Under enlightened management thinking, the procurement function in industry today is thoroughly organized in competently staffed, centralized units under able direction. With industry geared to ever-faster operating pace, and cost factors becoming increasingly burdensome in successful administration, management must give even greater recognition to the profit potential inherent in efficient purchasing.

**OUT OF EVERY SALES DOLLAR**

• • • • •

**Purchase of materials, components, etc., accounts for 40 to 75 cents out of every sales dollar. The average for the metalworking industry is estimated at 49 cents. In contrast, profit margin runs only from 5 to 9 cents per sales dollar.**

## Orderly Thinking Process

In simplest terms, buying is a process of thinking in orderly steps leading to a decision. The need, or want, first arises. Then means are sought and steps taken to satisfy it. After arriving at what seems the best bargain, or solution, all things considered, such as quality, service, utility and price, the buyer closes the deal.

**ORGANIZATION CHART**—Complex and multitudinous activities incident to industrial procurement call for a high degree of organization. Over-all responsibility rests with the Purchasing Director, buying functions being broken into separate units to assure utmost in correlated, effective procedure.

Industrial purchasing, however, involves more than just the simple exchange of money for goods and services. Planning is required in satisfying the varying requirements of increasingly complex manufacturing operations.

It entails a whole chain of operations inside and outside the company. Needs arise outside the purchasing department proper. In arriving at buying decisions amicable trade relations with scores of suppliers figure prominently. So also does the utmost in co-operation among the different divisions within the company.

This latter is most important if the profit potential in efficient purchasing is to be fully realized. Purchasing must constantly counsel with engineering, production, operations, research, sales and other divisions within the company if sound decisions are to be arrived at and cost-saving buying policies instituted. All of these departments are dependent on purchasing for efficiency in their operations since purchasing, basically, is a service department for all other departments.

**Interdepartmental Dependency**—If for no other reason than this interdepartmental dependency, procurement must be so organized as to afford the utmost in satisfactory service at all times. It follows that purchasing not only is required to be informed on supplies and suppliers, prices and markets, materials and processes, but it is essential that it be thoroughly conversant with the ramifications and operations within the company it-

self, and that it be fully versed in production and sales policies.

Over the past 20 years, and especially during and since World War II, industrial purchasing departments have undergone tremendous evolutionary change from "Buying Departments" to "Procurement-Inventory Control Departments," according to T. J. Ault, Borg-Warner Corp., Chicago. In other words, the change has been from requisition-filling departments to cost-controlling, inventory-scheduling departments.

Responsibilities of the purchasing department in the modern concept of enlightened business administration involve manifold activities. These include: Purchase of materials and the obtaining of services; placing of contracts; expediting deliveries; traffic; handling of requisitions and supply complaints; supervising inventories; negotiating settlements and returning rejected materials to suppliers; disposing of surplus or obsolete supplies; checking on subcontractors.

Also included are: Checking, approving and auditing invoices; analyzing purchases; cost accounting; assisting in the standardizing of materials, supplies and equipment; co-operating with other departments in the introduction of new ideas and products; developing new sources of supply; maintaining price and other essential records; maintaining a comprehensive, up-to-date catalog library; keeping a government regulations file; obtaining priority assistance from governmental agencies; reviewing contracts issued by other departments in the interest of uniformity in contracting policies; promoting sound, amicable trade and public relations.

**Runs Business Gamut**—This is not a complete listing of the activities involved in advanced procurement administration. Nor are they necessarily listed in order of importance. Nor are all the listed activities the sole responsibility of purchasing departments. But whether they are or are not reposed in purchasing, all are closely related to over-all procurement. Each activity encompasses routines peculiar to itself, often demanding and receiving particular treatment, so that it can be said that purchasing performance virtually runs the gamut of business administration.

Organizational setup and buying procedures vary from company to company, conforming with the requirements as to size of the firm, extent of its manufacturing activities, and geographical disposal of its facilities. But despite these differences, there are basic purchasing functions common to all organizations, differences in procedure largely being dictated by the varying nature of business and industry, and the peculiar conditions and practices applying in each separate field.

For a good many years past there has been an increasing tendency toward centralized authority over activities attending the purchasing function. The drive in this direction was accelerated during World War II and since, spurred on by the rising complexities of conducting business under the extraordinary conditions arising from tight government control of the economy.

Bringing related activities under unified control makes for sense from the standpoint of procurement efficiency. That a dollar saved through efficient buying shows up just as brightly in balance sheets as one saved through efficient production and distribution is increasingly recognized today.

***Price is important, but should be considered in relation to quality, service, quantity, reliability.***

The policy of the Warner Gear Division, Borg-Warner Corp., described by Mr. Ault as a "glorified job shop although we do have straight line production," provides a striking example of this centralization trend in purchasing.

**Activities Centralized** — Quoting from Warner Gear's revised Purchasing Manual: "Recognizing that the responsibilities and requirements of efficient purchasing and material control are synonymous, the Warner Gear Division has consolidated all procurement, material control and follow-up, traffic and priority control in the purchasing department.

"This arrangement places the responsibility of the purchase function on those who have the interest and skill to do the work properly, and whose primary concern is the performance of this special task. It permits the establishment of uniform policies with respect to seller relationships, the prescribing of procedure, records and routine, and also the expediting of inspection and approval of materials. As a result, economy is promoted by consolidating requirements and setting up material standards for inventories."

In the modern, well planned purchasing division sections are set up within it, each section being charged with specific responsibilities. This arrangement gives recognition to the varying and complex problems involved in executing the separate but related procurement functions, and makes for maximum efficiency in over-all conduct of purchasing operations.

At a midwest tank plant, for example, the purchasing division is composed of six major sections. 1. Buying is done through three groups set up in the buying section giving recognition to the different problems involved, and the different handling required, in executing purchases for productive and nonproductive use.

**Activities Broken Down**—Two of these buying groups are concerned with purchases of productive materials, parts, etc., that is, supplies and items entering into the end-product. The third buying group is charged with purchasing for nonproductive use, covering materials and items used in producing the end-product but which do not actually become a part of it.

2. Paper work of the buying groups is processed in the order writing section.

3. The scheduling section works closely with the manufacturing division in co-ordinating the flow of materials.

4. The expediting section breaks supply bottlenecks, keeping materials flowing into the plant on schedule, thus assuring continuity of manufacturing operations.

5. The engineering section keeps subcontractors informed of changes in design, specifications and manufacturing methods.

6. The priorities section is concerned with government supply rules and regulations, allocations, etc.

Enlightened management views purchasing as falling in three primary categories: 1. Competitive buying; 2. value analysis buying; 3. management buying.

**Basic Function** — Competitive buying is the basic function in procurement. It is concerned with the conduct of buying in its mechanical aspects, including the interviewing of salesmen, conducting negotiations with suppliers, seeking out supply sources, analyzing bids and prices, effecting adjustments with suppliers, maintaining price and supply records, issuing and expediting orders, traffic, and maintaining a catalog library, etc.

Value analysis buying is described as purchasing for profit. This includes promotion of purchasing efficiencies in the direction of cost reduction. It involves analyzing of purchases, including specification analysis, product analysis, vendor analysis and quantity analysis; research in purchasing policies and procedures; putting new ideas to work.

Management buying is concerned with the selection of purchasing personnel, training of personnel, promotion of public relations and participation in civic and welfare activities.

The maze of activities attending modern purchasing would try the patience of Job were it not for organization planning. Such is required to an unusually high degree if procurement is to be carried out with dispatch, economy and utmost in efficiency.

And this need for planning is just as essential for the success of the small company as it is for the large corporation operating numerous plants. The small firm's problems are proportionately smaller, but they are no less complicated than those of larger contemporaries, and just as acute and demanding upon management. In some respects, the small company's purchasing problems are less readily solved.

***Purchases of the right quality at the right time delivered at the right place in the right quantity spell lower costs.***

**Reflects Astute Buying** — Time and experience have demonstrated that the difference between red and black ink for many small firms is traceable in no small measure to astute purchasing policies.

Purchasing decisions and actions bear directly on costs and the continuity of operations. If costly shutdowns are to be avoided supplies must be available at the right time, in the right place and in the right quantity. Inventories must be kept in balance with operating requirements, and material costs held to the lowest point consistent with quality. Success in achieving such efficiency implies a high degree of organization planning in purchasing, and such planning begins with personnel.

## Key To Efficient Buying

Rapidly changing economic and political conditions, coupled with tremendous technological advances throughout all industry, are burdening procurement with ever-increasing responsibilities and broadening service activities.

Management, striving for better products and services, broader markets, lower prices, and at least sustained profits in the face of steadily rising costs, is demanding highest quality performance of those entrusted with the purchasing function.

Buyers must be up to the job's requirements in every respect if procurement performance is to measure up fully to its opportunities. Merely obtaining materials is not enough. Getting them at the right time, in the right place, in the right quantity, and at the right price and of the right quality, all are equally important.

Personnel qualifications are exacting of a high degree of integrity, intelligence, astuteness, personality, curiosity and imagination. The modern purchaser, says W. B. Wright, University of Rochester, must be a "negotiator, technician, economist, administrator and lawyer."

**Specialized Skills Needed**—Comprehensive knowledge of supply sources and the know-how of purchasing in its varied aspects and phases are essential. Actually, specialized skills are demanded in effective procurement. And not only must key staff members have a broad understanding of economics, but they also should have the knack for co-operation within and without the company.

The measure of a purchasing department is the qualified men who make up the staff, according to Bruce D. Henderson, general manager, Purchases & Traffic, Westinghouse Electric Corp., Pittsburgh. To build a good purchasing organization, one capable of meeting today's responsibilities, and even more for the future, personnel policy must be a primary consideration, he says.

Beginning with selection of executives competent to administer buying policies at the top management level, purchasing personnel should be of the highest possible caliber. Mr. Henderson says a sound, comprehensive personnel policy includes: Recruiting of staff members with the potential ability to fill the top jobs; personal coaching and the opportunity to assume responsibility should be provided; keeping the promotion path open

on the basis of potential, not seniority; fitting personnel into the right jobs in the over-all organization pattern.

Characteristics to seek in employing purchasing personnel are: 1. Sales ability in intangibles; 2. analytical ability; 3. administrative talent; 4. vitality and drive; 5. skill in human relations; 6. imagination.

High potential personnel can be recruited most anywhere. Engineering and law schools are fertile recruiting areas because their high standards of ability and performance screen out the less capable. Graduate schools of business administration also are good sources as they also screen for ability and provide training. Of course, other departments of the company are excellent areas from which to select personnel suited to the exacting demands of the purchasing job. Juniors in other companies are likely prospects.

**Avoid Slipshod Hiring**—In any case, no matter where purchasing staff members are recruited, slipshod hiring should be avoided. Definite qualifications should be specified for the various jobs in the department. Those selected for buying positions, so far as possible, should be experts in their fields.

Selection of competent personnel is of utmost importance, but beyond that is the urgency for promoting a continuing program of education within and without the company.

**Educate the Buyer**—Recognition of purchasing as a major business function today is reflected in the fact it is a subject included in management and business administration courses at more than 200 colleges and universities. Professional purchasing agents were the pioneers in purchasing education. From their ranks came most of the teachers and many of the textbooks, manuals, principles and policies, laying the groundwork for present-day college courses. For many years the National Association of Purchasing Agents through its educational committees has actively and aggressively promoted these educational courses, the first comprehensive outline having been developed by the National Committee on Education of NAPA in

## *Check List for Efficient Purchasing*

1. **Are your purchasing personnel qualified? Are they adequately paid?**
2. **Are duties clearly defined; authority properly delegated?**
3. **Have you a purchasing manual detailing policies and procedures?**
4. **Are interdepartmental relations satisfactory?**
5. **Are supplier relations cordial? How extensive is supplier background data?**
6. **Are purchases timed right as to need and market conditions?**
7. **Are you abreast of market developments?**
8. **Are you getting lowest prices consistent with quality, service, etc.?**
9. **Are you taking full advantage of trade discounts?**
10. **Are your purchases right quantitatively?**
11. **Do specifications fully acquaint suppliers with your needs?**
12. **Do specifications encourage broad supplier participation?**
13. **Is use of standard items and sizes promoted?**
14. **Are you developing new supply sources?**
15. **Materials Research—What are you doing to make effective use of substitutes and new materials?**
16. **Are your vendor lists complete and up-to-date?**
17. **Are your vendor catalog files well maintained?**
18. **Are historical and price records in order?**
19. **Are your expediting methods paying off?**
20. **Are you getting the most from your traffic dollar?**
21. **Do you keep check on subcontractors; do you keep them informed?**
22. **Do you weigh outside purchases against home production?**
23. **Inventory Control—How efficient is it?**
24. **How do you handle supply complaints; return rejected materials?**
25. **Do you utilize surplus supplies and equipment to the utmost?**
26. **Do you have a purchase analysis program?**

1930 with vocational courses largely in mind. Since then the program has been progressively expanded and is today being promoted in impressive fashion with more and more schools adding the subject to their curriculum.

Benefits deriving from this formal educational program are incalculable for the future progress of the purchasing function and the purchasing profession.

**Training Essential**—Beyond the classroom there is an equally important phase of purchasing education. This concerns imparting of knowledge, skills and the buy-how of purchasing by the senior staff members to their juniors in the organization. Even the oldsters can learn much through the interchange of ideas and views. Participation in trade association activities should be encouraged, trade shows attended, plant inspection tours promoted, all these contributing immeasurably to the sum of knowledge required by the individual buyer in attaining purchasing proficiency.

Development of proficient purchasing personnel is costly in time and money, but, as Mr. Henderson of Westinghouse says, "it pays high dividends in ultimate performance."

## Seek New Approaches

Purchasing departments, large and small, must be continually alerted for new approaches to buying problems if the profit potential inherent in efficient buying is to be taken advantage of completely. Missed opportunities for effective purchasing can prove to be lost opportunities for profits.

Technological progress is an inexorable driving force for change. New methods of manufacture are being devised constantly. There is no standing still in the development of new products, the uncovering of new materials, and the application of old materials in new and broader uses.

**Impose New Burdens**—Changes in long-rooted business procedures are inherent in all these, imposing new and additional burdens on the purchasing department. That the whole scope of the procurement function is subject to constant broadening is evident with management pressing continually for better products, broader markets, and lower prices. This means purchasing performance must be ever under closest scrutiny.

**Develop New Concepts**—Despite the tremendous progress in purchasing procedures over the past 20 years much remains to be done in developing new concepts of purchasing directed toward improving buying techniques and operations of the procurement function. There are several major areas which today present a challenge to alert purchasing executives.

Four of these areas were pointed out recently by W. A. Sredenschek, General Electric Co., Schenectady, N. Y. He cites: Materials research; traffic; value analysis; and inventory control.

Steady growth of the economy and rapid extension of the mass production idea to all industry has burdened purchasing with increasingly difficult problems in obtaining materials in ever-larger quantities. Supply shortages, some of which may prove to be more or less permanent, intensify the buyer's difficulties. Because of the terrific consumption pace over past years domestic supply conditions in many basic raw materials are deteriorating alarmingly. More and more the United States is heading toward "have-not" status in some critical materials, and if future acute shortages are to be averted purchasers must look beyond the nation's borders in filling their increasingly pressing needs.

***Inventory control insures economical, effective purchasing***

**Plan for Long Pull**—In the circumstances, it is evident industry must do long-range planning. Materials research must be pushed on a more extensive scale than heretofore. This relatively new concept in procurement requires intensive study of both short and long-term supply-demand patterns and prospects, not only being directed toward exposing the specific position of the separate companies, but also the domestic and world supply-demand pictures as related to the over-all procurement problem.

Much deep digging into market conditions, analyzing of price trends, measurement of changes in materials costs, analyzing of materials availability, etc., are entailed. But the data developed will provide management with the tools needed for realistic planning of operations, both for today and tomorrow.

**Challenging Area**—Traffic provides an area of challenge for new concepts in over-all purchasing performance. Freight bills bulk large in costs, and they are getting larger. In the last half dozen years or so there have been at least five general increases in transportation charges. Obviously a lot of money can go down the rat hole through faulty, inefficient control of company traffic.

Through value analysis costs can be lowered substantially. This new concept in industrial purchasing involves close study of purchases of materials, components and services from all angles which figure in sound procurement practice. This contributes to the searching out of alternate materials, alternate methods and new ideas for accomplishing the same end-results at lower cost.

**Balance Stocks** — In inventory control purchasers can find excellent opportunities for promoting cost reducing policies. This is an especially fertile area for application of cost-saving ideas and methods considering the fact that carrying charges on inventory run high, being estimated up to 20 per cent of the value of the material each year.

Practices and procedures once new are soon outmoded in the fast moving kaleidoscope of business. Procurement policies and methods are no exception in this regard. What was sound practice yesterday, may be inadequate today. Only through use of the most advanced methods and most forward-looking policies governing buying will it be possible for management to keep step competitively in the business parade.

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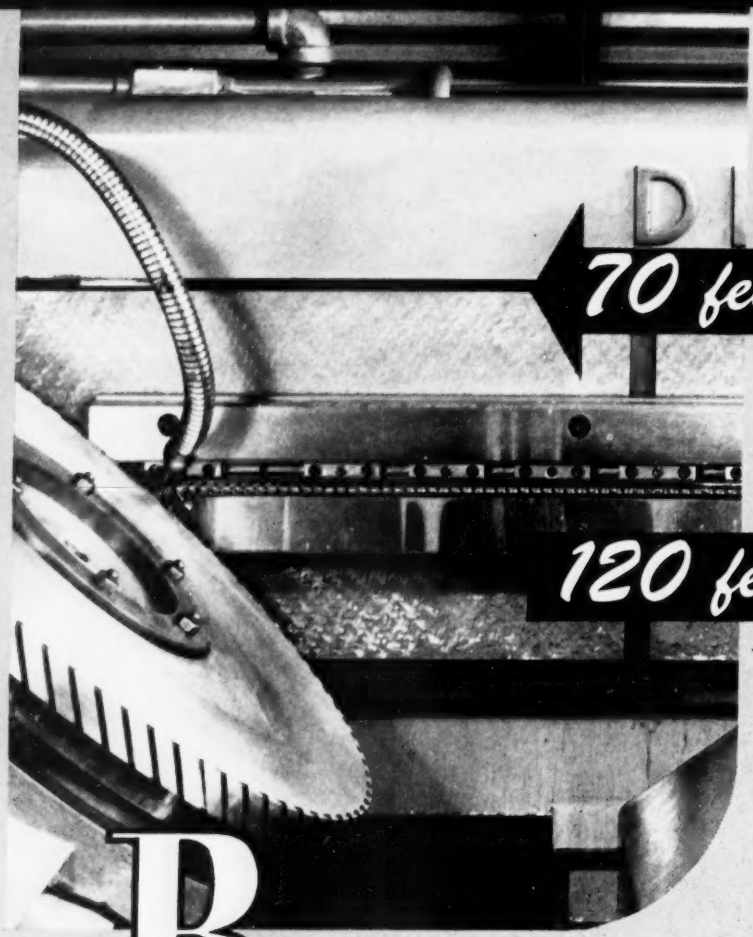


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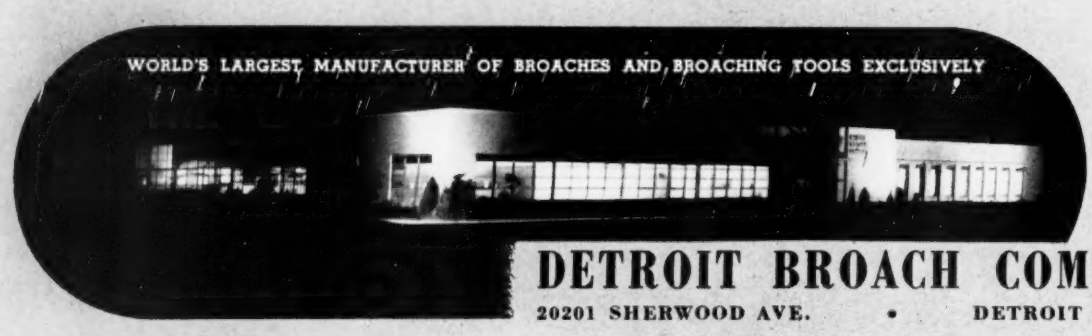



**DETROIT BROACH COMPANY**

20201 SHERWOOD AVE. • DETROIT 34, MICH.

# Production AND Engineering NEWS AT A GLANCE

**SAFER JETS**—Emergency hydraulic power for jet aircraft in event of engine failure at either high speed or landing speed is provided by a ram air turbine developed by AiResearch Mfg. Co., Los Angeles. Extended into the air stream or installed in main air duct, unit produces full power in less than a second at sonic speeds and at landing speed full power is attained in about 3 seconds. A pump driven by the turbine wheel develops hydraulic pressure necessary to operate the control system and other vital units when the main hydraulic power system fails. Speed control is automatic. The turbine unit weighs only 15 pounds, is 12 inches in diameter and occupies less than ¾ cubic foot of space.

**BOMBED PLASTICS**—Subjecting flexible plastic containers to a few seconds bombardment with electrons from a million-volt x-ray machine toughens the material so containers can withstand steam without wilting. The curing process crosslinks long, chain-like molecules colled polymers which make up these plastics. Dr. C. G. Suits, General Electric vice president and director of research, says flow temperature of the plastics is raised substantially and resistance to destruction of many solvents is also increased. The beam is produced by removing the tungsten target from a million-volt resonant transformer-type x-ray apparatus. Instead of peppering the target to produce x-rays, electrons shoot into the open air through a small metal window. In most cases not more than 15 seconds exposure is needed.

**SHELL MOLDED STAINLESS**—Cooper Alloy Foundry Co. is now in production on shell molded valves and fittings made of stainless steel. Parts weighing from 1 to 25 pounds are poured into shell molds without support or backup of any kind. By eliminating backup materials such as sand and shot the entire operation is simpler and the foundry is cleaner. Metal yield has been increased by 20 to 35 per cent over regular sand practice. This means faster production per ton of metal melted and poured and less scrap. There are no delays due to castings which are difficult to make in green sand. Shell molding gives closer tolerances and improved surfaces so that finishing time is held to a minimum.

**SILICON-BASED CERMETS**—Use of silicon as a component of cermets for high temperature applications was suggested by B. C. Weber, Wright Air Development Center, at the recent meeting of the American Ceramic Society. Silicon may be especially useful in turbine buckets because of its low specific gravity of 2.3, which is lower than that of aluminum. Its melting point of nearly 2600°F puts it well within the range of refractory materials. If silicon metal can be combined with ceramic materials to give a cermet having similarly favorable properties, then it may become an important engineering material. A cermet mixture of 80 per cent silicon and 20 per cent titanium dioxide shows outstanding resistance to oxidation. Another promising cermet is a fused combination of silicon and titanium carbide. In this case the starting materials are converted to silicon carbide and titanium disilicide. Titanium silicide looks especially promising for high temperature applications because of its high melting point of 3850°F.

**LIGHTWEIGHT STRENGTH**—Heat treating and processing procedures developed by Lockheed engineers make it possible to use effectively standard, deep hardening 4340 steel with a tensile range of 260,000 to 280,000 psi. The former range was 180,000 to 200,000 psi. Vital parts like cargo and passenger plane landing gear are being made stronger yet lighter through use of the 40 per cent stronger steel. The weight saving is about 23 per cent.

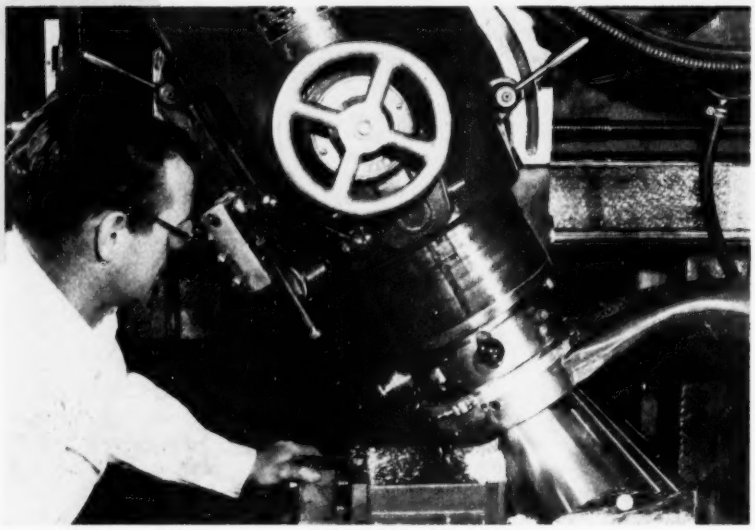
**AGE OF SPEED**—Right in stride with almost every other phase of today's civilization, machining is exploring and utilizing higher speeds than we even thought possible several years ago. One good example is the use of super-speed milling on aluminum and other nonferrous aircraft parts. The machine used can give up to 10,700 spindle rpm and up to 400 inches per minute feed. In addition to the increased production there are some other advantages. Among these are a good work finish, high accuracy and less distortion of the workpiece due to rapid heat dissipation. p. 116

**FLEXIBLE CIRCUITS**—A new method of producing flexible electronic circuits, instead of using the rigid etched or stamped circuits was described at the National Conference on Airborne Electronics by Sylvania engineers. Thin layers of copper, in the desired configuration, are attached to a woven cloth by the thermosetting adhesive. An important advantage is that circuit may be attached to rigidly fastened components whose connecting terminals may have large dimensional tolerances. An appreciable amount of dimensional differences between units may easily be taken up by the flexible backing of the circuit.

**METALWORKINGS**—Use of carbon dioxide as a coolant seps up a production milling job on steel forgings, p. 125 . . . Tube-reducing dies outgrow old sizes as construction progresses for the Bliss 18-inch machine, p. 120 . . . problems of rolling tapered aluminum to commercial standards are leading to new developments, p. 118 . . . annealing is made simpler and more accurate with better control instrumentation, p. 128 . . . Detroit Edison Co. orders one of world's largest turbine generators, p. 133

# High-Speed Mill Flies into Aircraft Parts

**Machine works on nonferrous parts at speeds up to 10,700 rpm and feeds up to 400 inches per minute. Time savings are one advantage — there are others**



High-speed milling machine takes a 30-degree angle cut on a block of 75 SW aluminum. Cut is ¼-inch deep and four inches wide. Rate of feed is 225 inches a minute. Speed of the machine on this operation is 10,700 rpm

SUPERSPEED milling ups production of aircraft parts at Consolidated Vultee Aircraft Corp., Ft. Worth, Tex.

Speeds of up to 10,700 rpm and feeds to 400 inches per minute step up output as much as five times on nonferrous metals. Machine to do the work was built by Cincinnati Milling Machine Co. after an extensive survey to determine what airframe manufacturers wanted.

**Appraisal** — Instigation for the program started with the Air Materiel Command. In 1950 they determined the need for the investigation of high-speed milling of nonferrous metals for aircraft production.

Engineers for Cincinnati Milling then surveyed 13 of the major producers to determine the kind and type of milling machine best suited to present and future needs for aircraft production.

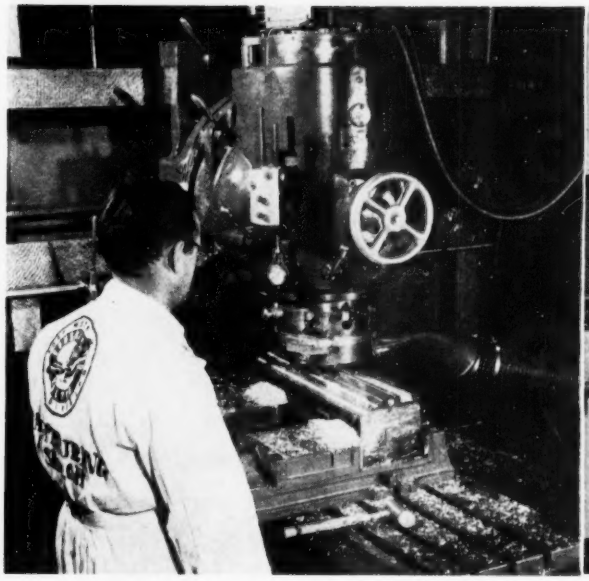
**Feature Study** — This was done with a detailed physical survey in which aircraft industry members were asked to complete forms to reflect their desires and general recommendations. Questions on the survey were designed to indicate among other things: Type of machine most desirable, general work to be performed, speed and horsepower of machine spindle, feed range, sizes and types of cutters generally used, table-travel lengths, general ranges of the machine, specifications, etc.

After this and other data were collected and analyzed a full report recommending a suitable type of milling machine was submitted to the Air Materiel Command for approval before proceeding with the next phase of work on the contract.

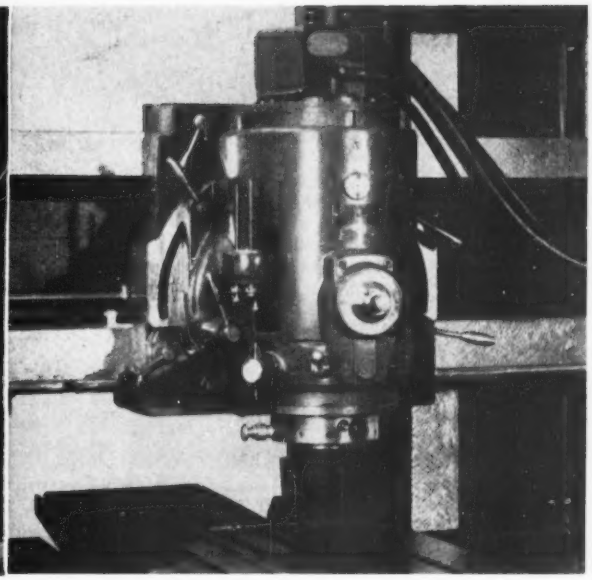
**On Paper**—Machine was then designed to agree with the recommendations and also to include provision for future design changes to permit longer table stroke, more vertical and cross ranges of the machine, larger workpieces and flexibility of design for various types of high-speed milling machines. A wooden scale model was built to illustrate the design of the proposed machine.

Spindle of the machine is driven by a self-contained, high frequency, multispeed induction motor. The rotor is integral with the spindle. As such it is independent of mechanical drives from other power sources of the machine and hence could be applied to a wide variety of milling machines.

**Swings Either Way**—Spindle carrier is mounted on a sliding carriage on a heavy cross rail support. Cross positioning of the spindle is accomplished by means of a hand crank equipped with micrometer dial for accurate positioning. Spindle housing is mounted on the carriage in a swivel plate which permits the spindle to be positioned angularly up to 45 degrees either side of vertical. A lever-operated latch provides for accurate location



Here the high-speed machine takes a 1¼-inch end mill cut, ¾-inch deep in a block of 75 SW aluminum. Feed is 50 inches a minute. Heat is carried off in chips



This self-contained, water-cooled, high-speed head could be used on a variety of milling machines for adaptation to aluminum and magnesium milling operations

of the spindle in the vertical position.

Spindle itself is carried in an adjustable quill to provide for vertical adjustments of cutter position independent of the vertical adjustments of the cross rail. A three-position turret stop and dial indicator simplifies accurate adjustment of cutter to preselected depths.

**Water Cooled —** The spindle is equipped with a hand-lever operated brake and a spindle lock is provided to simplify cutter changes. Lever type clamps are provided on carriage, swivel mount, and quill adjustment to lock the spindle in position during the cut.

The spindle housing is connected to a water circulating system to carry away the heat generated by the high speeds and the spindle bearings are lubricated by a compressed air-oil vapor system.

**Average Part—**From the original survey made in 1950 the average aluminum aircraft part is 14.77 inches long, 2.65 inches wide and has 0.350-inch maximum stock. A 10.33 inch average feed was used giving about 1.43 minutes cutting time.

If this same average piece is milled on the high-speed machine the part could be rough milled using 10,700 rpm with a 4-inch diameter cutter using the full 50 hp of the machine. A minimum feed rate of 200 inches per minute could be used for rough milling giving a cutting time of only 0.08 minutes for each piece.

**Time Savings—**If a smooth surface is required on the part of between 10 to 15 microinches, a finish cut can be taken at the same setting of the work using approximately 100 inches per minute feed rate giving an additional cutting time of 0.15 minutes.

There is a decided saving in cutting time using the high-speed milling method. Since the machine is designed for quick setups on a large variety of work, additional savings result when setting the cutter to the proper cross position and depth of cut.

**Tooling —** Since the machine rough and finish mills a large variety of aircraft parts in a few seconds cutting time, special attention should be paid to the tooling equipment to derive the overall maximum efficiency from the equipment.

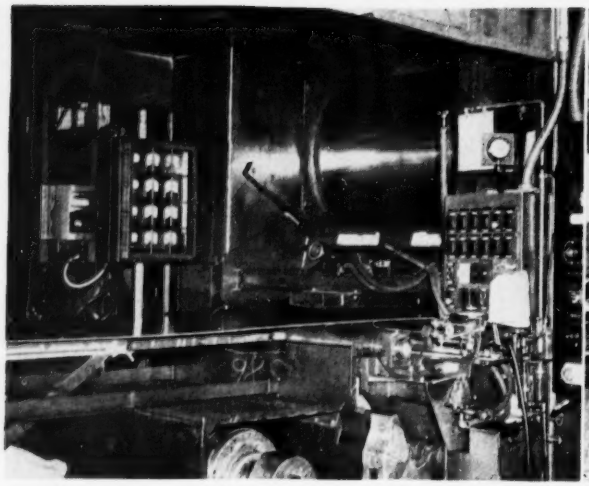
Special design cutters and cutter holders should be used which are dynamically balanced and suitable guards should be used to protect the operator and to direct the chips into the suction system pipe connection. All cutters should have tungsten carbide blades with 2, 4 or 6 teeth for milling aluminum, depending on the operation.

**Tight Grip —** Cutter blades and wedges should be designed so that they are locked in place using axial serrations to prevent blades and wedges from flying out of the cutter body due to centrifugal force combined with cutting forces.

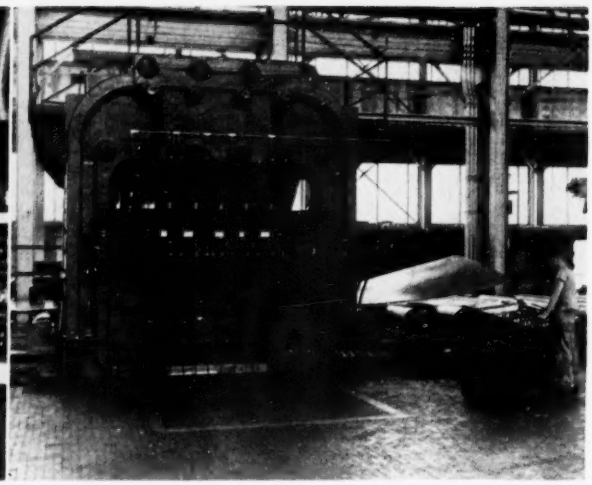
Special attention should be paid to the method of holding the work. Special quick-acting air clamp fixtures or air operated vises should be used to chuck the work quickly with clamping jaws designed to hold the work firmly for the cutting forces of the operation. If the special tools are designed and used as suggested the equipment will give maximum production on a large variety of aircraft nonferrous parts.

Here are some of the advantages of high-speed milling of nonferrous aircraft parts: Production is increased up to 5 times by using the method. Good finish on the work ranging from 6 to 20 microinches can be obtained. This depends on the type of material, speeds, feeds, design of the cutter and proper tooling.

High degree of accuracy on the work results in proper flatness, size, parallelism, etc. There is less warping of the work because of rapid heat dissipation. Most of the heat is carried away by the flying chips.



Keeping taper out is the big concern of most roll operators, but not on this 72-inch mill. Automatic controls change the roll pressure to produce tapered sheet



Heat-treat warpage in tapered plate is flattened in this 180-inch leveler stand. This unit will be used with the new 144-inch tapering stand being installed

# Rolling Tapered Aluminum Isn't Easy

**Not when taper rate tolerance is held to commercial standards. But aircraft builders' dire needs are stimulating development of the art and the production capacity**

By JOHN H. ALDEN
*Chief Metallurgist, Fabricating Division*
Aluminum Co. of America
Pittsburgh

TODAY'S high speed aircraft pose a host of new problems to aircraft builders. Among these is development of tapered sheet for wing surfaces, adding greater strength and stiffness without adding excessive weight.

Use of sheet that tapers off in thickness as it runs from the fuselage to the wing tip provides greatest strength in the high-stress areas of the wing. In addition, great improvement in stiffness is possible with tapered sheet as compared to use of sheet and plate of different thicknesses, joined together to form a stepped structure.

**Obvious Answer** — Though the first tapered sheet in this country was produced by machining a sheet of uniform thickness, the obvious answer to the supply problem was to adapt the large aluminum rolling mills to the tapered product. Job was pioneered by Aluminum Co. of America when it initiated experimental rolling tests in 1947.

First tapered sheet was successfully rolled in Alcoa, Tenn., on production equipment. This and succeeding work resulted in a new 144-inch wide, hot and cold reversing mill now being installed at Alcoa's Davenport, Iowa, works under lease term arrangement with the U. S. Air Force Air Materiel Command. Scheduled for operation in early 1954, this mill will greatly increase the range of widths and thicknesses available to aircraft builders.

**Not So Easy**—At first glance, it would appear to be a simple matter to roll a tapered product by gradually opening or closing the rolls as the sheet progressed through the mill. However, it was soon learned that problems of roll shape, roll temperature, lubrication and control of roll opening was a far more complex matter. With wider and longer sheets, and steeper tapers, such problems are multiplied.

Strong aluminum alloys are employed in two basic types, bare and Alclad. In ordinary sheet and plate the cladding is present as a percentage of the total thickness and is uniform over the entire area. Fortunately, in the case of the rolled, tapered product, it was soon learned that the thickness of such cladding would remain in its proper ratio to the thickness of the core or base alloy.

**Flatness Troubles** — Attainment of suitable flatness of the finished product proved to be still another story. Most aircraft manufacturers require heat treated alloys to take advantage of higher strengths, and the treatment and quench caused some warpage and distortion of sheets. Alcoa's development work on flattening methods and equipment met this challenge and the trouble has been removed in large scale production.

Before tapered sheets, manufacturers used different thicknesses joined together to form a stepped structure with off-sets in the reinforcing structure to present a flush

surface on the exterior. While this is still being done in many cases, this type of construction requires many butt joints between sheets, and many manufacturers do not use it despite structural desirability in some areas.

**Machining Method** — Another method of gaining the structural advantages of tapered sheets involved machining plates of uniform thickness, removing as much as 40 per cent of the material. But machining or milling is time consuming and production rates per milling machine are low compared to output of a rolling mill. Further, milling removes any Alclad coating on the machined sides and exposes core metal to corrosion.

Milling does have one advantage. It permits production of so-called sculptured plates and also those having a compound taper from side to side as well as from end to end. But single taper was found to be most used, and for many items a combination of rolling and milling or grinding will produce the complex shapes.

**First Test**—Rolling trials began in 1948 at Alcoa, Tenn., using a single stand cold mill with manual control of the roll opening to produce the taper. Sheets 36 and 48 inches wide were sent to aircraft companies where encouraging reports resulted from tests and examinations. A group of Alcoa engineers developed an automatic control device for the rolls, and manual control of the opening was abandoned. With the new system, controls are set for the desired taper and the rolls duplicate the setting in the tapered sheet.

**LIMITING DIMENSIONS—TAPERED SHEET AND PLATE**

| Dimension | Present | Future |
|---|---|---|
| Length | 38 Ft. | Over 40 Ft. |
| Width, Sheet | 60 In. | 120 In. |
| Width, Plate | 72 In. | 120 In. |
| Maximum Taper Ratio— | | 4.5 to 1. |
| Thickness thick-thin end | 3 to 1 | 0.050 In./Ft. |
| Maximum Rate of Taper | 0.025-In./Ft. | |
| Minimum Rate of Taper | .001-In./Ft. | 000 |
| Thickness, Maximum | 0.750-In. | 1.500 In. |
| Thickness, Minimum | 0.032-In. | 0.032 In. |
| Thickness Tolerance*—Sheet | Commercial—0.001 | Commercial |
| Plate | Commercial | Commercial |

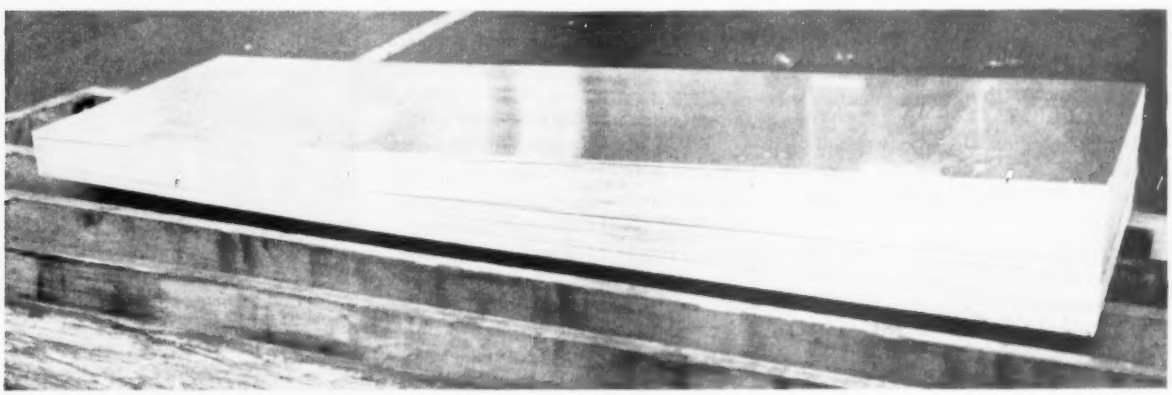
* Standard Commercial tolerances for gauge and width corresponding to any given location on tapered sheet.

To provide facilities for production of still wider, heavier and longer sheets and plates, the company is installing at its Davenport works a new 144-inch reversing mill. Working with the new mill will be some of the existing equipment at Davenport — a 144-inch breakdown hot mill, a 100-inch breakdown mill, a large plate heating furnace and a 180-inch leveller stand. What this new mill is expected to do can be seen in the enclosed table.

**Just a Start**—What has been done to date in tapered sheets appears to be just the beginning. Some manufacturers would like wing and tail sections tapered in two directions. Some would like sheets tapered for a portion of the length and uniformly thick the remainder; still others want sheets with more than a single degree of taper in the same piece. A few of these items have already been produced and development work is now in process on several other projects.

Since Alcoa started it in 1948, tapered sheet and plate business has grown until today the company is delivering this product in production quantities for a number of military aircraft. In this experimental work and production, tapered sheets as thick as 0.075-inch at the heavy end, as thin as 0.032-inch at the light end and as wide as 72 inches have been rolled. Tapers range from 0.001 to 0.025-inch per foot on lengths ranging from 26 to 310 inches — a range of tapers geared to the specialized requirements of critical aircraft design.

With the new large mill at Davenport, Alcoa will have a completely integrated unit of considerable flexibility. This will permit manufacture of more of the specialized items. Combined rolling and machining or grinding operations can be employed to effect economies and improve production rates on other items.



This stack of 38 pieces of 0.225-0.075 x 24 x 72-inch 75S-T6 tapered sheet graphically illustrates the roll tapered product coming out of Alcoa's Davenport works

The 7500-pound die for compression forming 18-inch tubing measures 50 inches diameter with 30-inch face width. In foreground are dies for existing machines. The huge machine will be installed at Tube Reducing Corp., Wallington, N. J.

# Jumbo Dies Compression-Form Tubing

**Die processing starts with a 20,000-pound forging ingot, machined to about 10,000 pounds before splitting. Machine will process 10 to 18-inch diameter tube**

EVERYTHING is big about the compression forming machine for cold reducing 18-inch light wall seamless tubing to be installed at Tube Reducing Corp., Wallington, N. J.

Pictured above for comparison are dies used in the company's existing machines and a mock-up of the 50-inch diameter 7500-pound giant for the 18-inch machine, now under construction at E. W. Bliss Co. (STEEL, Feb. 9, p. 90). Several sets of the dies already are being processed at Midvale Co., says Graham B. Brown, administrative engineer.

**Tools Needed**—Tube Reducing has on order a Cincinnati Hydrotel milling machine with 36 x 168-inch table and a 64-inch Bullard. After this equipment is set up at Wallington, only outside work necessary will be rough machining of outside diameter and side faces.

Processing of dies at Midvale's shop starts with a forging ingot (No. 1 roll steel) weighing close to 20,000 pounds, says Gil Engle, engineer, Rockrite Division. This ingot is machined down to about 10,000 pounds before splitting.

First step in machining is rough turning the outside diameter on a Bullard. Groove is rough turned to minimum diameter and flat faces machined. After die is split longitudinally (with circular saw that takes 1-inch cut across diameter) dies are ready for shipment.

**Shop Work**—Tube Reducing will remachine center line and side faces with a Hydrotel horizontal miller, then cut the keyway. Next step presents a tough machining problem: Groove in the die must now be tapered, using Hydrotel attachment on miller. Die is then heat treated to Rockwell C 55-60.

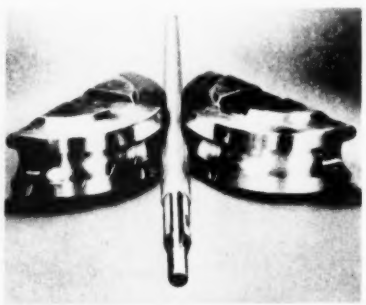
All flat surfaces are finish ground on Mattison surface grinder, specially constructed for the job with high clearance under wheel and wall guard that drops down in the keyway. Final step is grinding outside diameter and finishing tapered groove on Hydrotel machine. Finished die has 31-inch die face width and 50-inch diameter.

**Input, Output**—The 100-foot-long machine will process tube with 10 to 18-inch diameters, cold reducing to 9 to 17 inch OD. A companion machine will take ingoing sizes from 6 to 10 inches, reduces to 5 to 9-inch OD. Wall thickness obtained runs as light or lighter than 0.125-inch in 10-inch tube, 0.175-inch in 14-inch tube and 0.200-inch in 16-inch tube. Present machines take ingoing sizes up to 6½ inches.

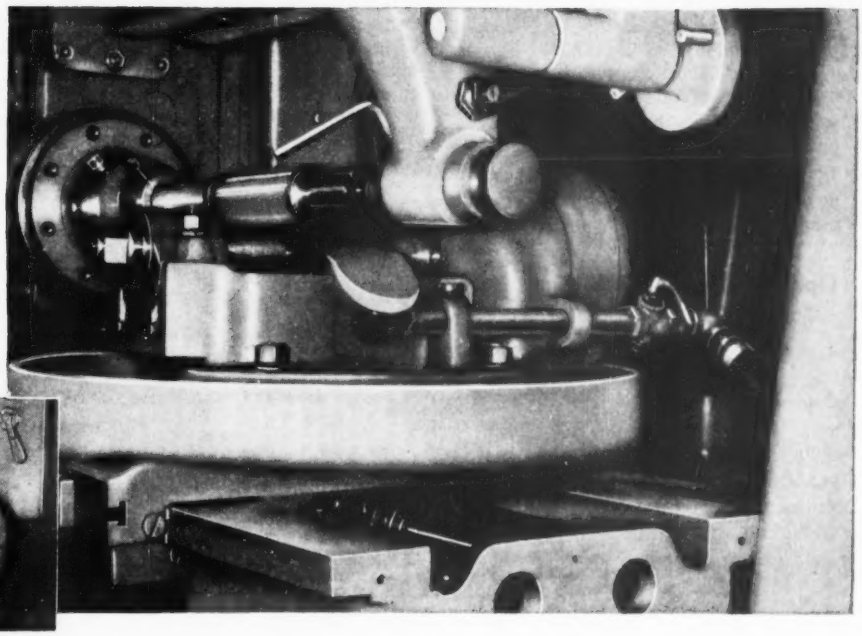
Light-wall seamless tubing now produced in existing smaller machines is used in manufacture of Jato rocket bodies, steel cores for propeller blades, spars for helicopters, braces and struts for aircraft landing gear, and flap controls. Development of larger aircraft, rockets, jet engines and other military items has fanned demand for larger sizes. Potential uses are large size ring-shape parts, cylinders, accumulators, casings, large volume pressure conductors and other products requiring thin walls and high strength.

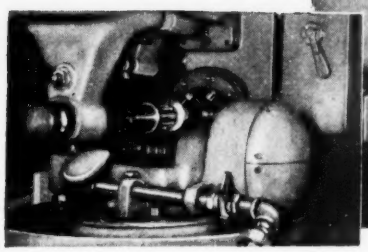
**Success With Titanium**—Tubing metal processed can be carbon and alloy steels, aluminum, copper and brass, stainless steel, titanium and other new metals. Some of the high-temperature resistant materials containing high nickel and cobalt have been processed with surprisingly good results.

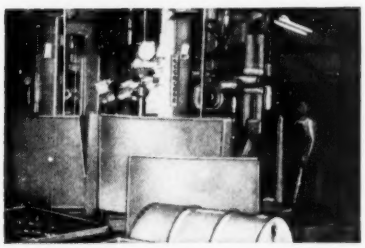
Zirconium and zirconium alloys

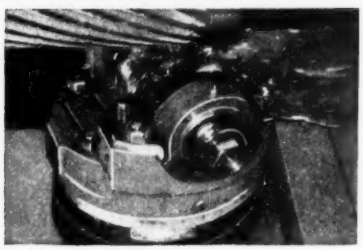


Rockrite tubing is cold reduced by compression forming. Semi-circular taper-grooved dies are rocked over tube, compressing metal against a mandrel that controls inside diameter









# "ON-THE-JOB" CUTTING OIL TESTS BY CITIES SERVICE ENGINEERS!

## at Timken-Detroit Axle Company

*TOOL WEAR REDUCED 25%...MANUFACTURING COSTS ALSO CUT!*

In an effort to reduce tool wear and cut manufacturing costs, the Wisconsin Division of Timken-Detroit Axle Company at Oshkosh called in Cities Service Engineers to make "on-the-job" tests.

Cities Service Lubrication Engineers made an on-the-spot study of the Timken-Detroit operation. This "on-the-job" evaluation by skilled Cities Service Engineers, long practiced in solving like problems, resulted in a recommendation for the use of a Chillo Cutting Oil that actually reduced tool wear 25% with proportionate savings in manufacturing costs!

WHAT ARE YOUR PROBLEMS? Why not take advantage of free, "on-the-job" testing? Call for our lubrication engineers at the office nearest you, or write Cities Service Oil Company, Dept. E18, Sixty Wall Tower, New York City 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

have been successfully compression formed. Titanium tubing, which is somewhat difficult to cold draw because of its tendency to seize or gall, has been reduced by compression method without this difficulty because of the relatively small amount of motion between die and tube.

## Clad Steel Kit Aids Selection

To aid engineers and fabricators in selecting desired finishes on clad steel plates, Lukens Steel Co., Coatesville, Pa., has prepared a new sample kit. Actual samples, polished to various finishes, are contained in pockets of a convenient reference folder. The kit is available to qualified buyers and users of clad steels.

Clad steels, such as nickel-clad, stainless-clad, Inconel-clad, Monel-clad and copper-clad provide low cost corrosion resistance, product protection and many other advantages.

Developed in 1930, the clad steels are now manufactured to many specifications. For many types of equipment they are judged to provide the same properties offered by the cladding metals in solid form, at substantial savings in cost.

## Rubber Rolls Dry Oily Sheets

Oil and heat, rubber's two worst enemies, are making no headway against a man-made rubber called Hycar.

Used as a rubber covering for a pair of steel mill rolls, the covers withstood boiling oil for more than two years, yet are none the worse for wear. Other rubber covers, either crude or synthetic, lasted about a week on the same job.

A development of B. F. Goodrich Chemical Co., Cleveland, the covers are in use on rolls at Niles Rolling Mill Division, Sharon Steel Corp., Niles, O.

Rolls work like wringer rolls on a washing machine, drying sheet steel as it emerges from an oil bath heated to 350° F. Ordinary rubber breaks down at temperatures over 250° F. Sheet steel made with this special oil-impregnated surface is used for manufacturing rust-resistant gasoline tanks for use in automobiles.

Pattern-cut sheets of stainless are quickly rolled to cone shape on this new machine at Ryan. It eliminates a number of tedious hand operations

# Cone Rolling Made Easy

**Reed-built machine turns out pin-pointed cones of stainless steel for jet engine exhausts. Many hand operations are dropped**

SUBSTANTIAL REDUCTION in manhours in building inner exhaust cones for jet engines is the report of Ryan Aeronautical Co., San Diego, Calif., who recently put into operation a powerful new machine. Designed by Reed Engineering Co., Carthage, Mo., the device rolls heavy stainless steel sheets into pin-pointed cones in a matter of minutes.

Inner exhaust cones must be as smooth and symmetrical as the surfaces of a 1200-mph airplane. They straighten the flow of the hot, turbulent exhaust gases as they rush at that velocity from the spinning turbine buckets of a jet engine. Their fabrication must meet the demands of supersonic service.

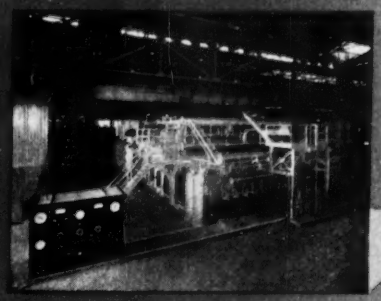
**The Old Way**—Formerly, Ryan built the cone in two sections; a truncated cone, or frustum, and a small cone. The frustum was rolled on a standard rolling machine with parallel-sided rollers. It was not possible to roll a complete cone on these standard rollers. Consequently, a small cone had to be formed in a die and then attached to the frustum to complete the larger inner exhaust cone configuration.

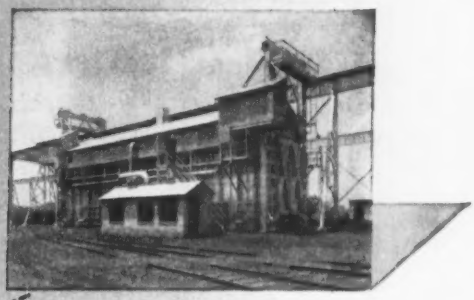
It required tedious hand and press work to form this small cone. After both the cone and frustum were heliarc-welded along their longitudinal seams, they had to be assembled in a precision jig and welded by hand around their transverse seam. This required 22 inches of careful welding and a substantial amount of labor in grinding the weld seams smooth and fitting the parts together.

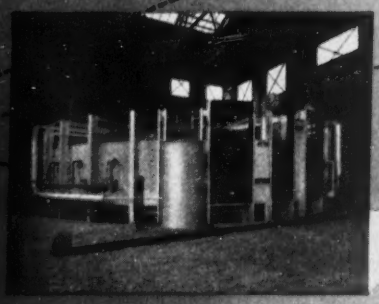
**The New Way**—Many of these time consuming operations have been eliminated with the new cone roller. Sheet of pattern-cut stainless is placed between the tapered rolls, pushbuttons are depressed and out rolls a complete cone. Longitudinal seam is then joined on an automatic heliarc welding machine. Twenty-two inches of hand welding and the tedious forming of the small cone have been eliminated.

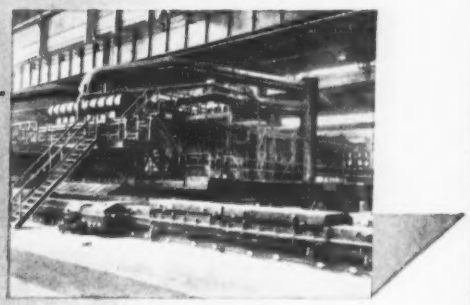
The cone roller will roll any pointed cone in which the included angle is greater than 24 degrees—the angle occupied by the three rollers when contracted together. Each roller is powered by its own 1½ hp electric motor, and six other motors actuate the rollers so that they can be extended and angled to meet all dimensional requirements. They slide in calibrated guide ways so that every setup can be duplicated. All motors are controlled by reversing magnetic starters.

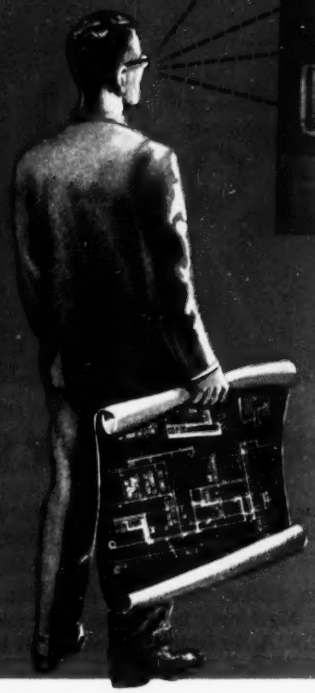
# LOOK TO RUST FOR FURNACE EFFICIENCY











## METAL INDUSTRIES RELY ON *Rust furnaces*

## FOR GREATER OUTPUT AND PROVEN ECONOMY IN ALL PHASES OF METALLURGICAL HEATING

Whether it's an OPEN HEARTH FURNACE, SOAKING PIT, SLAB HEATING, ROTARY HEARTH, FORGING, CAR BOTTOM, ANNEALING or any other type of metallurgical furnace, you can rely on Rust's half-century of engineering know-how and furnace experience for top performance. Ask the men who operate Rust furnaces (all fuels) . . . They all say: "efficient . . economical . . automatic . . easy to operate . . trouble free . ." Whatever your need, be it either a new furnace or a modernization of existing facilities, look to Rust for the complete job.

*THE WHOLE JOB IS ONE JOB WITH A*

**RUST "PACKAGE" CONTRACT**

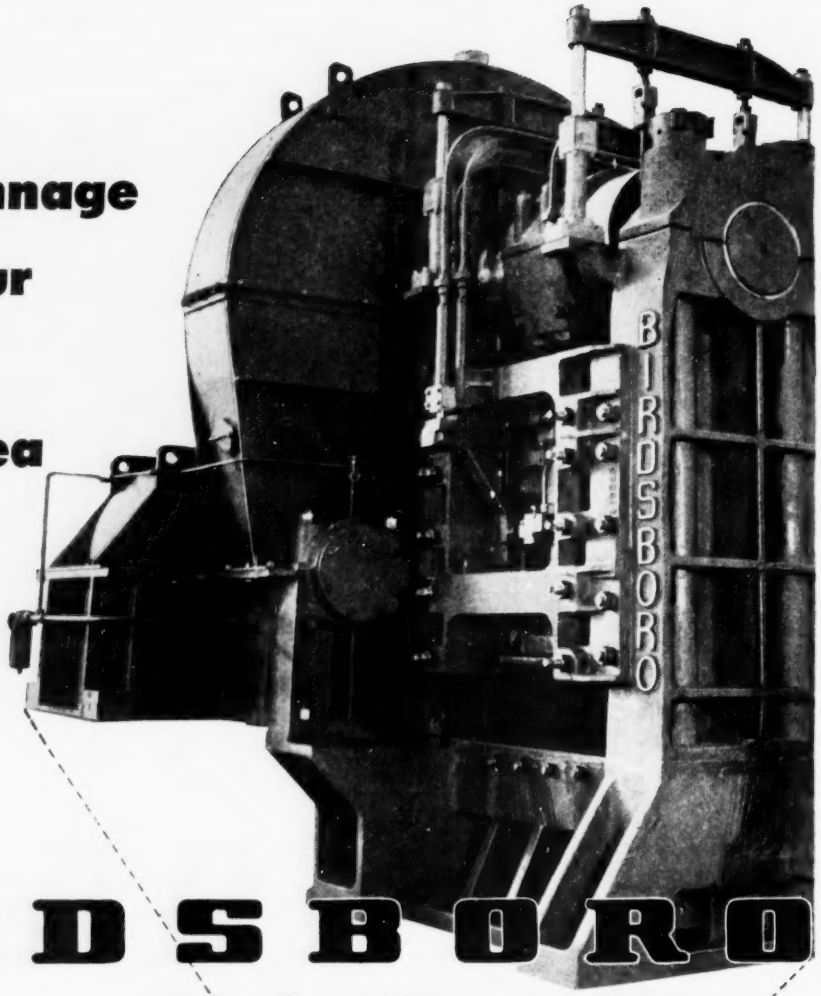
One contract covers everything . . . from blueprint through start up. Rust assumes responsibility for design, manufacture, erection, and is prepared to undertake all phases of the work with its own forces, including wiring and piping. This results in substantial savings . . . One profit instead of pyramiding ones which accrue where many subs are employed.

# RUST FURNACE COMPANY

*Pioneers in Furnace Design*

**RUST BUILDING PITTSBURGH, PA.**

# For more tonnage from your present work area



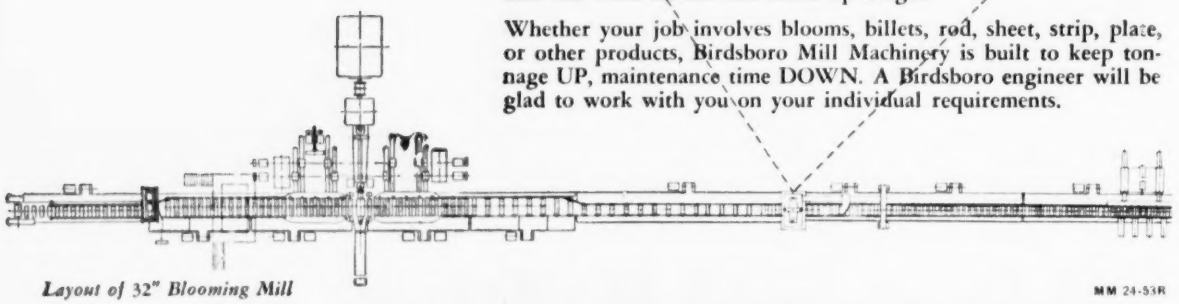

This Birdsboro Bloom and Slab Shear has been designed and built to handle the maximum production of a new 32" Blooming Mill installation.

# BIRDSBORO

## steel mill machinery

Getting maximum production from every foot of plant space is the demand of the day. And that calls for modern mill machinery that can work harder and stand up longer.

Whether your job involves blooms, billets, rod, sheet, strip, plate, or other products, Birdsboro Mill Machinery is built to keep tonnage UP, maintenance time DOWN. A Birdsboro engineer will be glad to work with you on your individual requirements.



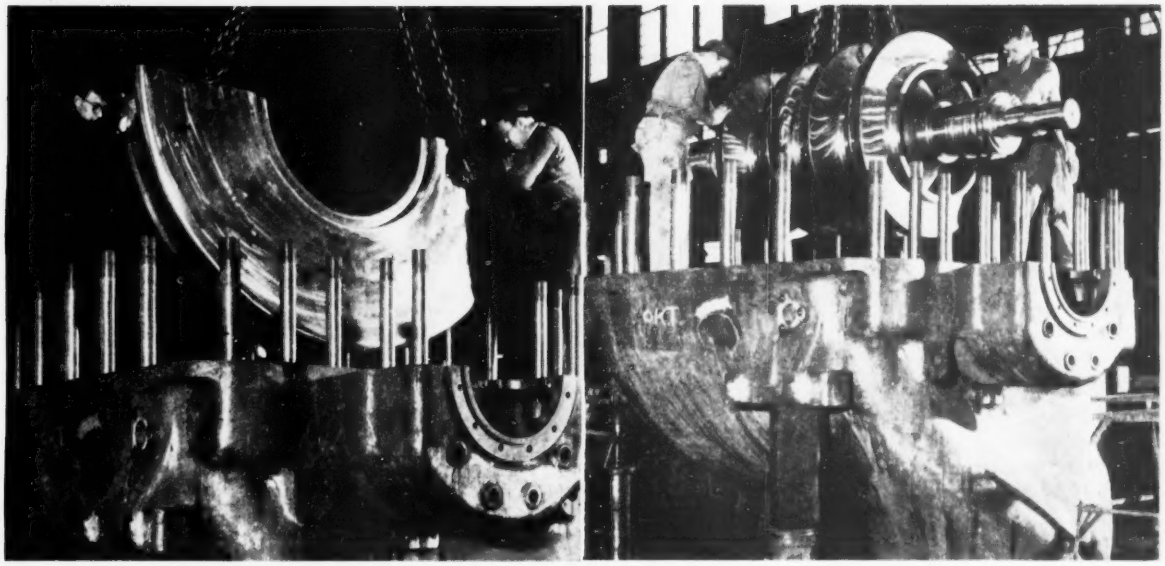
*Layout of 32" Blooming Mill*

MM 24-53R

**BIRDSBORO**

**BIRDSBORO STEEL FOUNDRY & MACHINE CO., BIRDSBORO, PENNA.** STEEL MILL MACHINERY Offices in Birdsboro, Pa. and Pittsburgh, Pa.

•**designers and builders of:** Steel Mill Machinery • Hydraulic Presses • Crushing Machinery • Rolls • Special Machinery • Steel Castings



**Assembly Stages for Multistage Compressor**

Workmen at Clark Bros. Co., Olean, N. Y., lower a semi-steel diaphragm into place in assembling one of the company's new multistage centrifugal compressors. Studs 3½ inches in diameter hold upper and lower cases. Tipoff to is capacity: 48-inch suction, 30-inch discharge flanges Here a four-stage rotor is positioned in the lower case. Before rotor is assembled, individual impellers get a 15 per cent overspeed run as final test. Compressors have 100,000-cfm capacity, will be driven by 8000-bhp steam turbines. The 4½-foot rotors run in 3600-rpm speed range

# $CO_2$ Cuts Milling Costs

**Milling speeds and feeds are stepped up and cutter life improved when carbon dioxide is put to work as a coolant. Parts are tough steel forgings**

CARBON DIOXIDE applied as a coolant aids in hard-forgings milling at Ford Instrument Co., Long Island City, N. Y.

Problem was to machine planet carriers for the transmissions of Piasecki helicopters. One of the operations required milling six pounds of stock from a 40-pound, 4340 steel forging. It's heat treated to 32 to 36 Rockwell C. To do this job, a carbide hollow mill was used with a soluble oil coolant. The milling machine was run at 290 rpm with a 2.25-inch feed.

**Cutter Longevity**—After the $CO_2$ system was set up and in use, the tools ran sharp for an average of 45 cuts instead of 35, and the tool was being run at 385 rpm with a 2.6-inch feed.

The $CO_2$ system used requires four steel tanks connected in series. About ¾ of each tank was filled with broken pieces of dry ice, about 200 pounds per tank. Then the tanks were capped and let stand for 24 hours, enough time for the ice to liquefy. During this interval, a pressure built up of from 800 to 1000 psi.

**Shoots from Behind**—Next, the tanks were connected to two flexible hoses, each of which held in series an expansion valve and a nozzle. Nozzles were aimed so the $CO_2$ spray impinged on the back of the revolving tool. Most of the resulting cuttings were blue chips.

For extra heavy work, the nozzle openings were drilled by a #74 or #76 drill. For lighter work, such as the posts for the planetary carriers, #78 or #89 drill holes were found satisfactory.

At the present time, the milling machine using $CO_2$ coolant is running 116 hours a week and is consuming 700 pounds of dry ice. The coolant's exceptional cleanliness eliminates the aqueous debris that usually accompanies the milling of tough steel. As a result, an operator is able quickly to load and unload his work. Moreover, the operators like nontoxic $CO_2$.

## Only Seven Mohicans Remain

Only seven men from industry are now on loan to the staff of the Metalworking Equipment Division, National Production Authority. The reduction in this division, which handles machine tools and related industrial machinery, is only part of the general slimming-down process in NPA.

Earl P. Leeds, Brown & Sharpe Mfg. Co., Providence, R. I., remains as director. Robert Howland, Bullard Co., Bridgeport, Conn., is chief of the Program Expediting and Product Distribution Branch and Norton A. Booz, Federal Machinery Co., Chicago, of Facilities Expansion. The Abrasive Products Section is headed by R. O. Anderson, Norton Co., Worcester, Mass., and Tools, Dies, Jigs and Fixtures, by Jacob DeMuth, Erhardt Tool & Die Co., St. Louis. On call for general consultation are William Browning, Linde Air Products Co., New York, and Lester Shea, Lindberg Engineering Co., Chicago.

IF IT'S

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OK for Hardness and Toughness

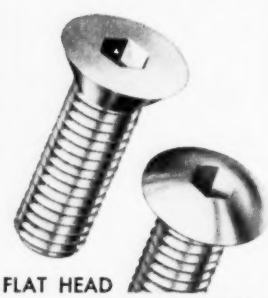
OK for Tensile Strength

OK for Shear Strength

OK for Thread Contour and Lead

*Good judgment calls for* **PARKER-KALON** *when good design calls for* **SOCKET SCREWS**

SIZE-MARKED CAP



FLAT HEAD BUTTON HEAD

GROUND THREAD SET

ORDER from the local P-K DISTRIBUTOR... the SUPPLY SPECIALIST that serves you

## This unique head design saves assembly time

Only P-K offers the Size-Mark and Gear Grip on Socket Head Cap Screws.

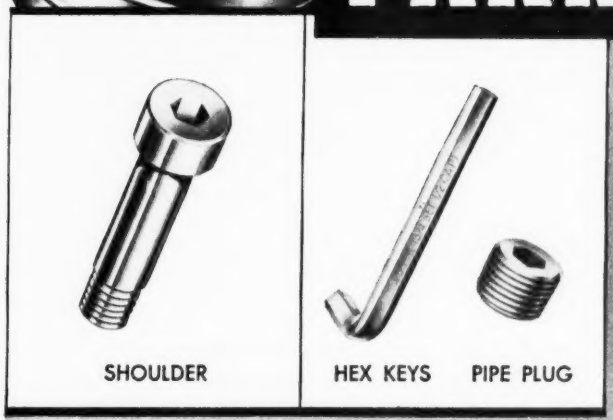
The size is clearly incised on the head, can be seen at a glance. It saves time and wasted screws when sizes get mixed up, prevents errors by "green" workers, helps veterans, also, to speed assembly. Maintenance men like it — it aids them in reassembling. Gear Grip prevents slips, speeds work, even when fingers are oily.

Since assembly expense is a sizable percentage of total production costs (in some products as high as 75%), fastening operations are any manufacturer's primary target for cost reduction.

Start making savings you've missed. Ask for samples. Parker-Kalon Corporation, 200 Varick St., New York 14.

# PARKER-KALON®

# SOCKET SCREWS




OK for Trouble-free Assemblies

**SOCKET SCREW DIMENSION FINDER**

Helps you plan assemblies. Pocket-size plastic chart gives essential dimensions of all types of P-K Socket Screws. Includes Set Screw Point Dimensions, and Thread Length Formula. Available FREE from your P-K Distributor.

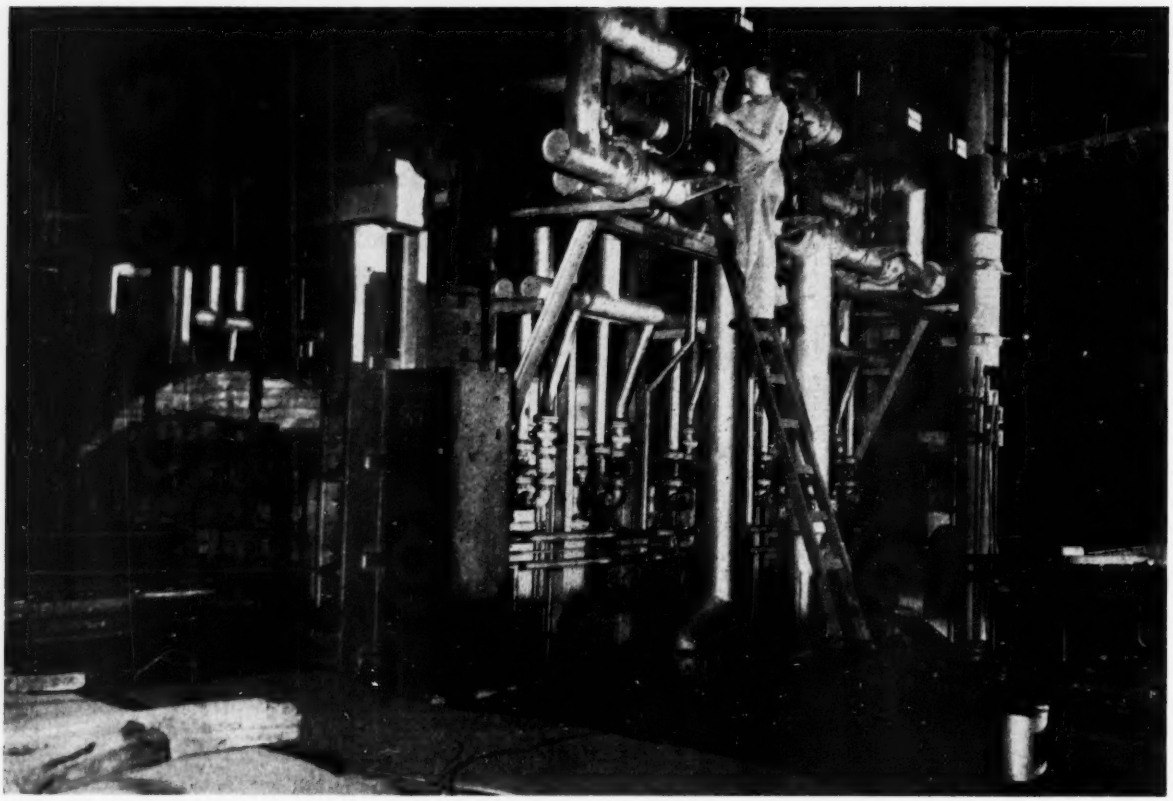


Fig. 1—Furnace for annealing stainless steel sheets

# Instrumentation Simplifies Annealing

**Precise control of fuel mix and temperature in a four-zone sheet and plate furnace at Canadian plant promotes uniformity in the various physical values**

By HUGH C. McKINNON
*Utilities Engineer*
Atlas Steels Ltd.
Welland, Ont.

COMBINING the most modern furnace facilities with up-to-date fuel-air ratio and temperature control instrumentation, Atlas Steels Ltd., Welland, Ont., constitutes the largest high-quality steel producer in the British Empire. Devoted to the production of stainless, high-speed, mining drill, tool steels, and special purpose types, its products are delivered to over 2500 Canadian consumers and exported to more than 50 foreign countries.

Plant facilities are necessarily varied to produce the many types and forms of steel products included in the company's line. In addition to steelmaking equipment, a three-mile underground pipeline delivers pure oxygen from the supplier to the Atlas plant.

Steel produced in electric furnaces is transferred to soaking pits, where its temperature is held between 2000 and 2400° F for subsequent rolling or forging. The blooming mill reduces the ingots to 36-inch blooms or billets of smaller cross section. These products are transferred to a machine which removes scale and surface imperfections and then are cooled for 24 to 72 hours.

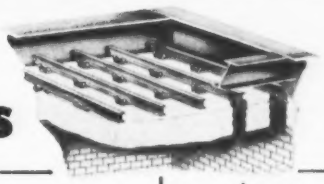
**Billets Conditioned**—Depending on its use, the steel may be forged by hydraulic press or pneumatic hammer, or rolled into bars, wire, sheet or plate. However, before final rolling or forging, each bloom or billet is conditioned either by grinding, chipping, scarfing with oxyacetylene gas or by a Billiteer, pickling or sand blasting.

**Quality Set Via Heat-Treating**—In the heat treating and annealing department, a new furnace for annealing stainless steel sheet and plate 24-gage to ½-inch thick has recently been installed. This is a four-zone furnace, 31 feet long, 15 feet wide and 12 feet high. Three

# Compare your SOAKING PIT COVER installation costs

**Typical Reports From 10 Steel Mills on**

## 27 B&W KAOCAST COVERS



| STEEL MILL | LOCATION | NO. OF COVERS INSTALLED | SIZE OF COVER (INSIDE FRAME) | MAKE & TYPE OF PIT | FUEL | TOTAL MAN HOURS | SQ. FT. MAN HOURS |
|---|---|---|---|---|---|---|---|
| Plant A | Indiana | 1 | 17′ 6″ x 9′ | Regen. | Mixed Coke Oven & Blast Furnace Gas | 29 | 5.5 |
| Plant B | Pennsylvania | 1 | 21′ 6″ x 10′ 2″ | Recup. Bottom Fired | Oil or Nat. Gas | 57 | 4.2 |
| Plant C | Pennsylvania | | 18′ 7″ x 8′ 8″ | Recup. | Mixed Coke Oven & Blast Furnace Gas | 24 | 6.7 |
| Plant D | Pennsylvania | 9 | 18′ 6″ x 17′ | Recup. Bottom Fired | Mixed Coke Oven & Blast Furnace Gas | 25 | 12.6 |
| Plant E | Pennsylvania | 1 | 16′ x 6′ 7″ | Recup. | Gas | 24 | 4.4 |
| Plant F | Ohio | 1 | 14′ 4″ x 9′ 11″ | Regen. | Nat. Gas | 20 | 7.1 |
| Plant G | Texas | 2 | 11′ 8″ x 8′ 3″ | Regen. | Nat. Gas | 23 | 4.3 |
| Plant H | Michigan | 1 | 13′ 3″ x 8′ 9″ | Regen. | Mixed Coke Oven & Blast Furnace Gas | 24 | 4.8 |
| Plant I | Pennsylvania | 4 | 22′ x 16′ 3″ | Recup. | Oil | 52 | 6.75 |
| Plant J | Pennsylvania | 2<br>1 | 12′ x 6′ 8″<br>14′ 2½″ x 10′ 1½″ | Regen. | Mixed Coke Oven & Blast Furnace Gas | 18<br>30 | 4.5<br>4.8 |

Lower installation cost is only half the savings story of this partial list of B&W Kaocast soaking pit covers. Ability to stand up, often in spite of rough handling, is even more important. That's why more and more steel mills are using B&W Kaocast. Side by side tests prove this refractory concrete lasts longer than any other castable.

Why? Because B&W Kaocast is the only 3,000 degree refractory castable with all these properties:

**• Practically no reheat shrinkage • Low volume change • High resistance to spalling and slag attack**

*Get all the facts on this versatile castable from your*
**B & W REFRACTORIES ENGINEER**

**BABCOCK & WILCOX**
THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

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**B&W REFRACTORIES PRODUCTS — B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick B&W Refractory Castables, Plastics and Mortars** • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment . . . Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

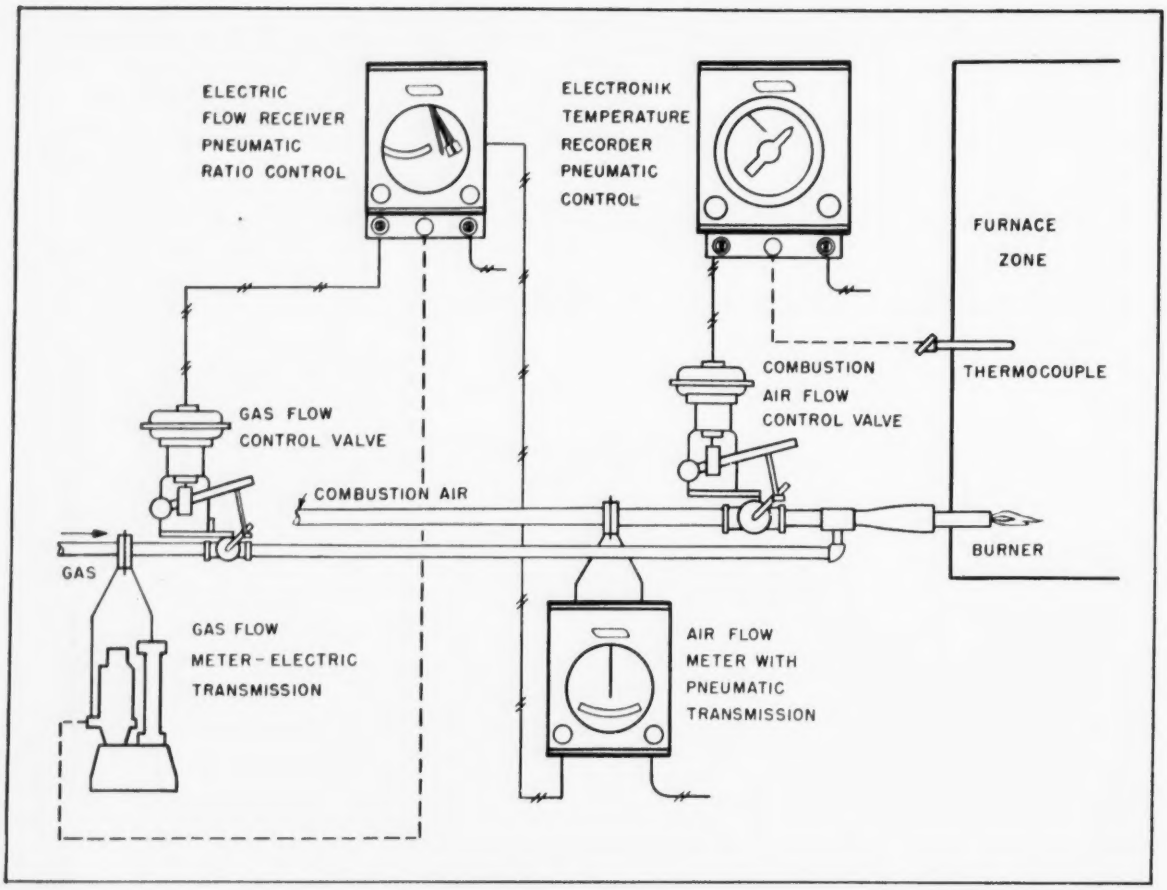



Fig. 2—Above is shown a diagram of the control system which varies the gas flow in one heating zone in a set ratio to the flow of combustion air

zones are gas-fired; the fourth is oil-fired. Annealing is accomplished at approximately 2000° F. The instrumentation applied to this furnace is engineered to provide the optimum of close temperature control and fuel efficiency.

Temperature of each of the three gas-fired zones is measured by a noble metal thermocouple with ceramic protecting tube and is recorded on an ElectroniK circular chart recording potentiometer, which also controls temperature pneumatically. Combustion air flow is measured by a mechanical flow meter equipped with a bell-type meter body and a pneumatic transmission unit. Gas flow is measured by an electric flow meter, which transmits its signal to a two-pen flow receiver and fuel flow controller (ratio controller), as shown in Fig. 2.

The ratio controller also receives a signal pneumatically transmitted by the flow meter on the combustion air line, and by means of its ratio and pneumatic control mechanisms, positions a valve on the gas line to the burner, varying the gas flow in a set ratio to the flow of combustion air.

The potentiometer controls the zone temperature by positioning a valve installed in the combustion air line downstream from the air flow meter. The air valve and the gas valve are each operated by Honeywell Air-O-Motor units.

Temperature control on the fourth (oil-fired) zone is also provided by an ElectroniK circular chart pneumatic controller, measuring the zone temperature by means of a noble metal thermocouple. The instrument operates in conjunction with an oil-flow-air-flow ratio unit, positioned by another Air-O-Motor valve operator to feed the proper amount of oil-air mixture to the burner.

**Processing Completed in Finishing Department**—Such final processing stages as straightening, pickling, sandblasting, grinding, polishing and cutting to specified sizes takes place in the finishing department. Here steel bars and drill rods may be cold drawn and sheets and flat wire can be cold rolled.

Supervision at all stages of production is maintained by Engineering, Inspection and Metallurgical Departments in order that any deviation from specifications may be immediately corrected.

A chemical laboratory analyzes each batch during the melting period. Subsequent operations are conducted in accordance with the specifications and procedures set up by the metallurgical and inspection department at Atlas, practices which have been found essential to production of uniform, high quality steels.

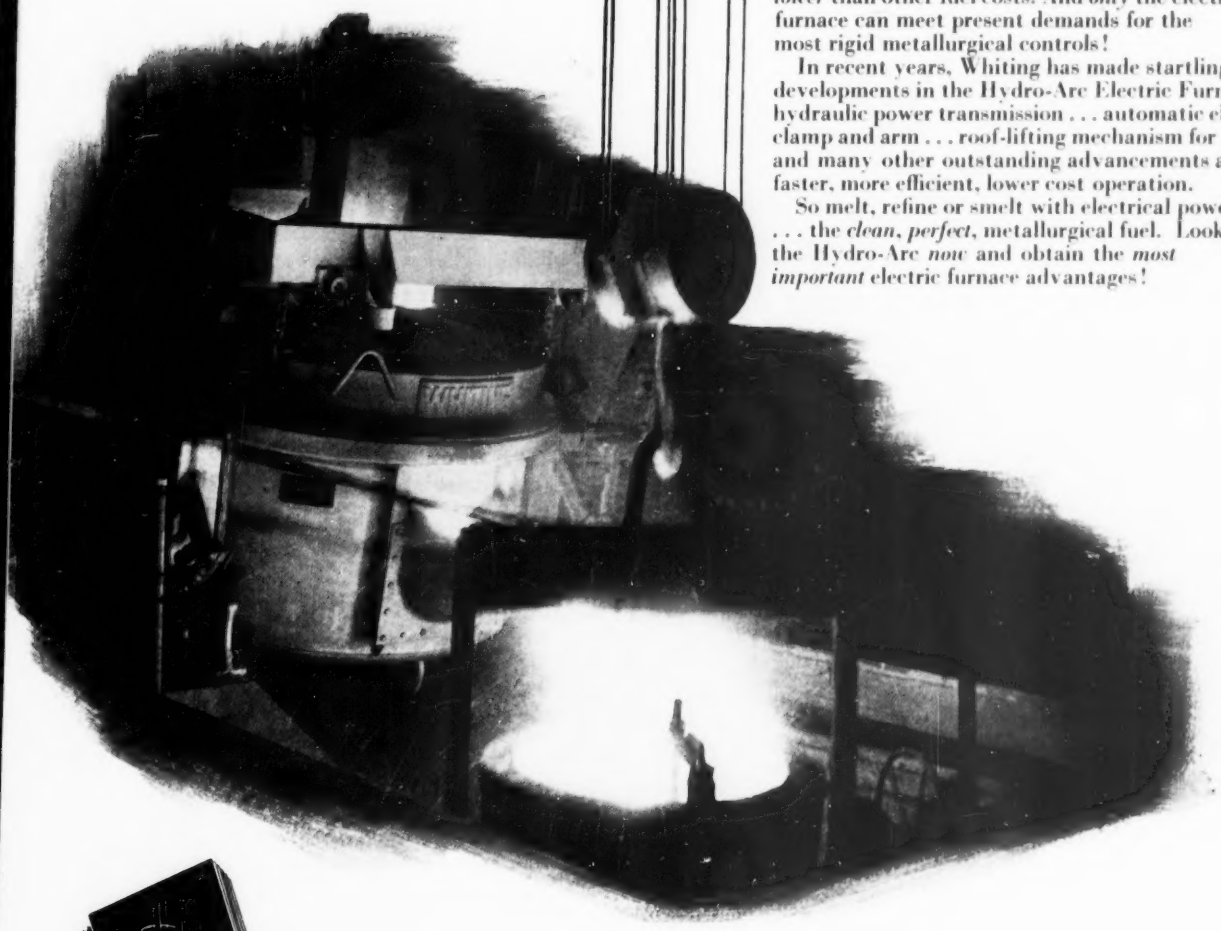
*ELECTRIC MELTING...*

# TODAY'S ANSWER TO GREATER ECONOMY!

The electric furnace is now the answer to *many* melting problems! That's because electrical energy has come to be *more and more economical* . . . in fact, today it is relatively *much lower* than other fuel costs. And *only* the electric furnace can meet present demands for the most rigid metallurgical controls!

In recent years, Whiting has made startling developments in the Hydro-Arc Electric Furnace. Our hydraulic power transmission . . . automatic electrode clamp and arm . . . roof-lifting mechanism for top charge and many other outstanding advancements assure faster, more efficient, lower cost operation.

So melt, refine or smelt with electrical power . . . the *clean, perfect,* metallurgical fuel. Look into the Hydro-Arc *now* and obtain the *most important* electric furnace advantages!



GET COMPLETE INFORMATION NOW!

*Send for 40-page booklet giving all Hydro-Arc features . . . tilting arrangements . . . electrode data . . . controls . . . capacities and other information.*

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***Remember . . . Electricity Is Low Cost, Clean, and Reliable!***

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*Hydro-Arc*
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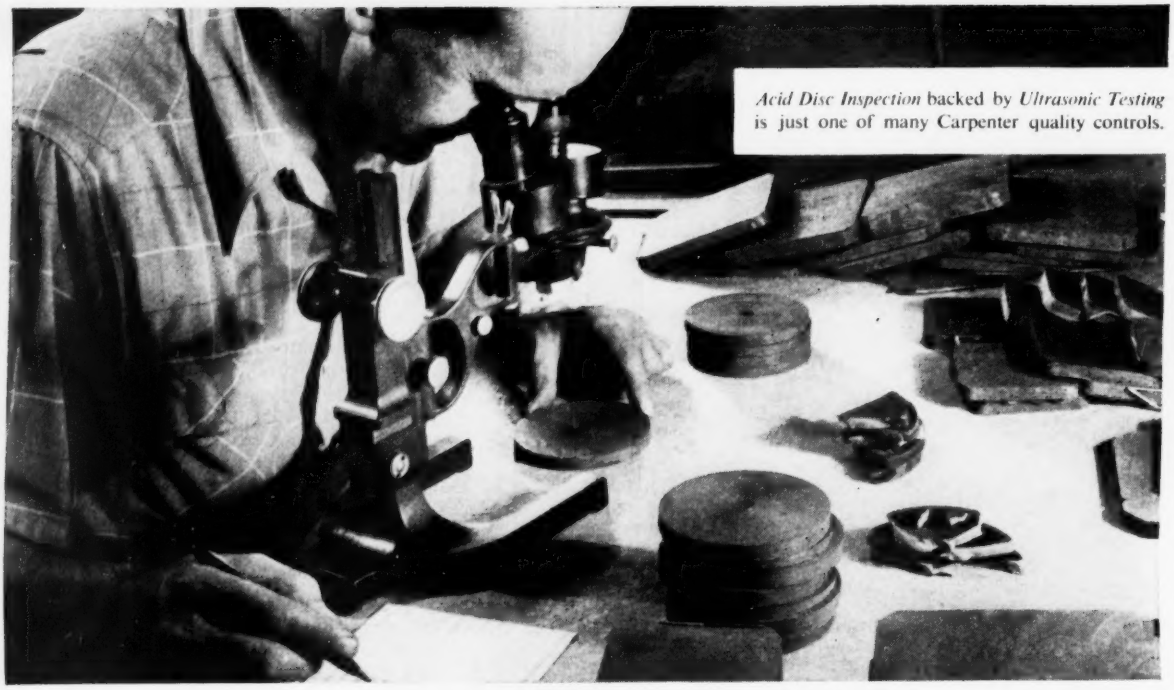

*Acid Disc Inspection* backed by *Ultrasonic Testing* is just one of many Carpenter quality controls.

# IF YOU USE TOOL STEEL, THESE ARE FACTS YOU SHOULD KNOW

When you make or use a tool or die you invest a sizable sum of money. And there are steps you normally take to protect your investment. You make sure the design is right. You follow through with accurate toolmaking and correct heat treating. But there is *one* factor involved in the success of your die, over which you have only indirect control. That factor is the *soundness* of the die steel you start with. After all, if the steel itself isn't right, you needlessly risk your entire investment.

How can you be *sure* the die steel you use has what it takes to assure good tools? The answer lies in the painstaking controls regularly practiced by the steel manufacturer. Listed here are the four important tool steel controls pioneered by Carpenter to give steel users like yourself the protection you need. Before you place that next tool steel order, ask yourself, "Does our steel supplier guarantee these four quality controls in the die steel we use?" Then remember: You can be *sure* of them when you specify Carpenter Matched Tool and Die Steels. And you don't pay anything extra! THE CARPENTER STEEL COMPANY, 139 W. Bern St., Reading, Pa.

**4 Tool and Die Steel Developments *Pioneered by Carpenter* Help Carpenter Customers Cut Costs, Improve Die Performance**

***Since 1929:***

**HOT ACID DISC INSPECTION** has been standard practice at Carpenter. To Carpenter customers it provides full assurance that Matched Tool and Die Steels are internally sound, shipment after shipment.

***Since 1930:***

**The TOUGH TIMBRE TEST** has assured Carpenter users a wider safe hardening range, greater dependability in performance.

***Since 1933:***

**The TORSION IMPACT TEST** has provided Carpenter Matched Tool and Die Steel users with more complete heat treating information that leads to better tools and dies.

***Since 1940:***

**The CONE TEST,** used to check and control hardenability of Carpenter water-hardening Matched Tool and Die Steels, has made sure that sections of the same size have uniform hardness penetration in lot after lot.

**Carpenter** Matched Tool and Die Steels

Export Department: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

*Mill-Branch Warehouses and Distributors in Principal Cities Throughout the U.S.A. and Canada*

## Generators—Still Growing

A STEAM turbine-generator unit, one of the largest ever built, has been ordered from General Electric Co. by Detroit Edison Co., it was announced recently by the G. E. Turbine Division.

The new unit, to be installed in the River Rouge Station of the Detroit utility, will have a turbine rated 260,000 kw. Its generator, rated 353,262 kva is designed for conventional hydrogen cooling. Machine will be of the cross-compound, double-flow, reheat design developed since World War II.

**High Pressure**—In this type of machine, steam first enters the high pressure turbine at a pressure of 2000 psi and a temperature of 1050° F. Steam is exhausted from the high-pressure turbine at about 720° F and is returned to the boiler where it is reheated to 1000° F before re-entering the turbine.

The unit will produce enough electric power to fill the needs of more than 700,000 people. Over 830,000 tons of coal—enough to heat 105,000 average homes—will be needed each year to provide steam for the turbine.

**Steam to Water**—Converting the turbine's exhaust steam back into water will require more than 140,000 gallons of cool water per minute to be circulated through the condensing unit. This water consumption is equal to that of a city of approximately 1,350,000 people.

A turbine-generator such as the River Rouge machine will use less than three-quarters of a pound of coal to make 1 kwh of electricity.

## It's An Earthmoving Purchase

Westinghouse Air Brake Co. is purchasing the earthmoving and related business of R. G. LeTourneau Inc. Fixed assets and machinery will cost $19.5 million and certain current assets, mostly inventory, an additional $6 to $8 million.

LeTourneau-Westinghouse Co., name for a new Westinghouse Air Brake subsidiary, will possess 720,000 square feet of floor space in Peoria, Ill. and 414,000 feet in Georgia along with a housing development at Toccoa. Two plants, manufacturing special products for




*use castings?*

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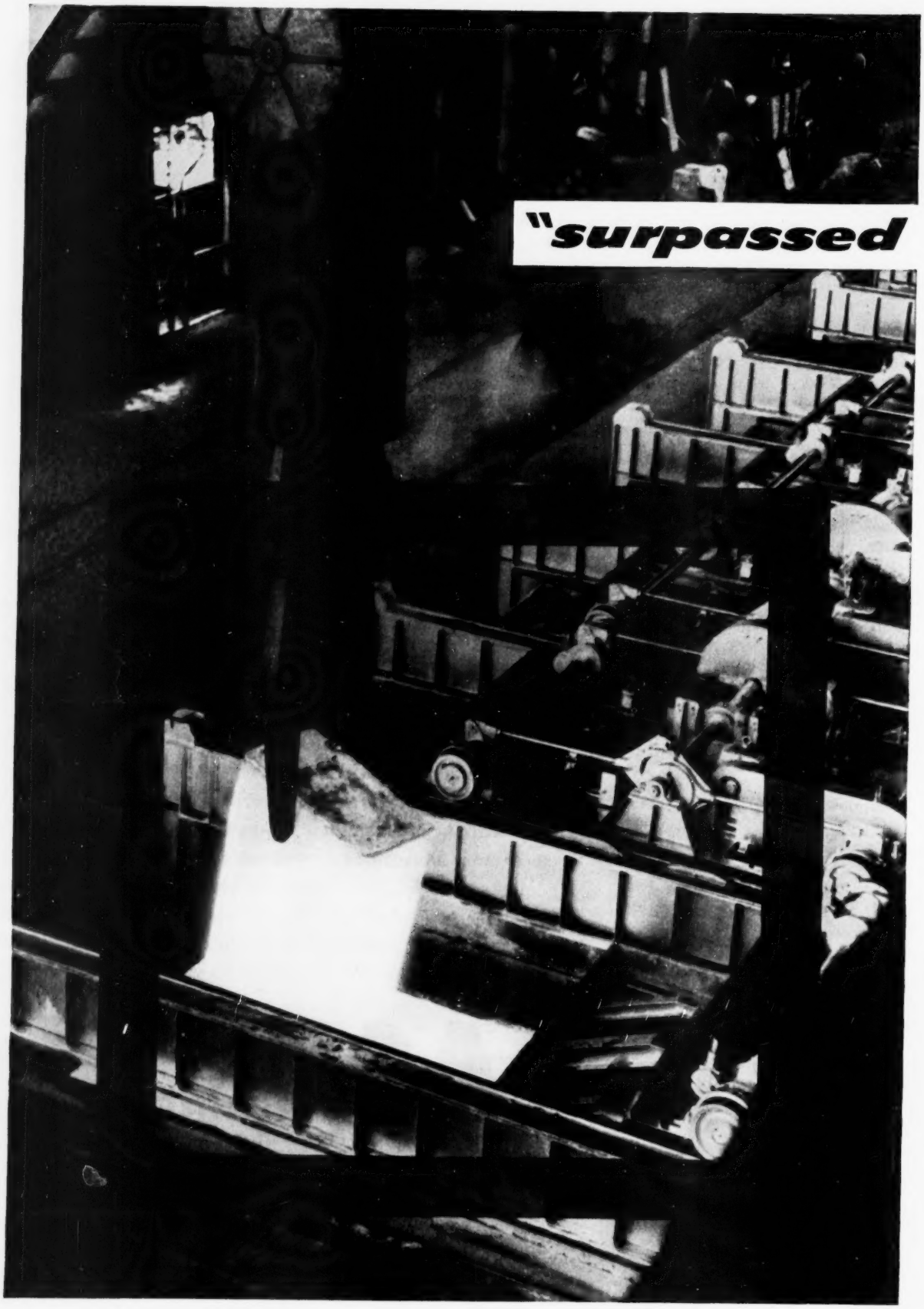

"surpassed

# the builder's guarantee"

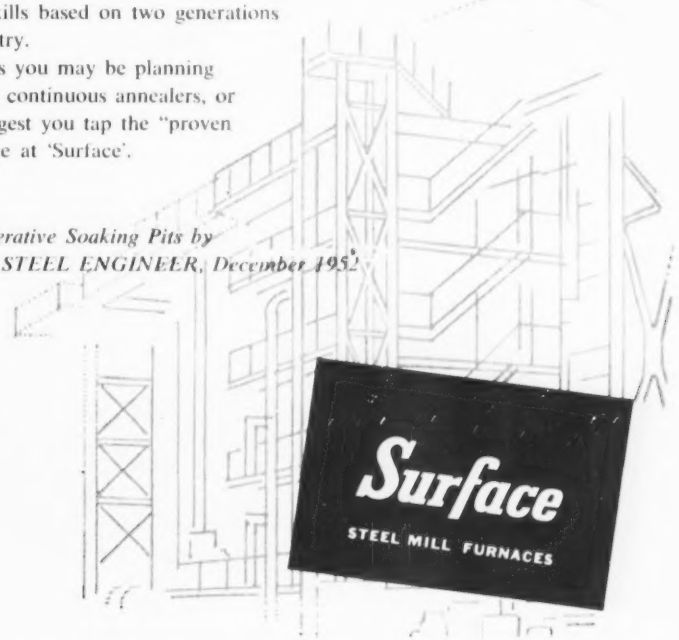
Why is it that such a high percentage of steel produced in this country passes through Surface Combustion equipment in one or more stages of its processing? Part of the answer might be furnished by a list of steel making advances in which our engineers have participated. The one-way fired soaking pit . . . the remotely located single recuperator serving a number of holes . . . the research which led to substantial increase in pit sizes without sacrificing the simplicity of the one-way firing principle . . . the jet pump which facilitates handling heated air in high volumes with low equipment maintenance . . . these you may recall as developments to which 'Surface' engineers contributed.

There's a more basic answer however: typically expressed in a customer's published report of comparatively recent 'Surface' soaking pit installation: "tons per hour . . . and fuel savings as shown by Btu/ton figures . . . has *surpassed the builder's guarantee.*"

This business of making one's word good is by no means unique at 'Surface'. We like to believe however that we combine this old-fashioned way of doing business with an exceptionally effective combination of metallurgical and construction skills based on two generations of experience and growth with the steel industry.

Whatever long-range capital investments you may be planning in making pits, slab heaters, annealing covers, continuous annealers, or any equipment involving combustion, we suggest you tap the "proven resources" of cost-saving skills and experience at 'Surface'.

*"Operative Results of One-Way Fired Recuperative Soaking Pits by E. H. Cauger and J. C. Stamm, Jr., IRON & STEEL ENGINEER, December 1952*



**Surface**
STEEL MILL FURNACES

**SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO**

One-way fired soaking pits • Billet reheating furnaces • Slab heating furnaces • Continuous type, controlled atmosphere strip annealing and normalizing furnaces • Controlled atmosphere annealing covers for wire and rod • Controlled atmosphere annealing covers for coil and sheets • Continuous furnaces for heat treatment of steel plate • Controlled atmosphere furnaces for carbon correction in high alloy rod and bar stock • Continuous type bright annealing and normalizing furnaces • Prepared gas atmosphere generating equipment • Pit type convection furnaces for rod annealing • Stress relief furnaces • Wire patenting furnaces

AMERICAN CHEMICAL PAINT COMPANY
AMBLER ACP PENNA.

Technical Service Data Sheet
Subject: *GRANODIZING** FOR LONG PAINT LIFE ON STEEL

**"GRANODINE" FORMS A DURABLE PAINT BOND**

Granodizing forms a crystalline, zinc phosphate coating on steel. This ACP paint-bonding process chemically changes the surface of steel into an inert non-metallic coating made up of thousands of microscopic zinc phosphate crystals.

Granodized steel thus presents a surface much more receptive to paint than untreated steel. Its crystalline structure permits a firm and durable "keying" or bonding of the paint finish. And the "Granodine" zinc phosphate coating itself is actually integral with the metal from which it is formed.

**"GRANODINE" CAN BE APPLIED BY DIPPING, SPRAYING OR BRUSHING**

Granodizing can be accomplished by:

1 Dipping the work in tanks;
2 Spraying the parts in a power washer; or
3 Brushing, spraying, or flow-coating the work with portable hand equipment.

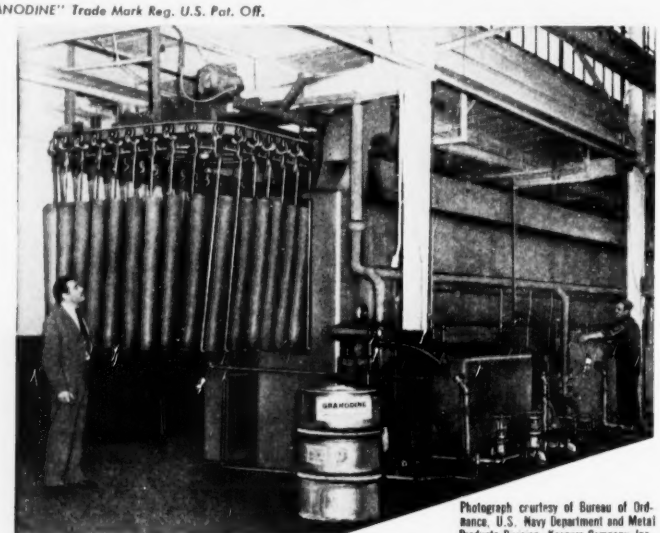
Choice of process is usually decided by such factors as the size, nature, and volume of production.

**"GRANODINE" STANDARD PRACTICE ON BOTH CIVILIAN AND MILITARY PRODUCTS**

Automobile bodies and sheet metal parts, refrigerators, washing machines, cabinets, etc.; projectiles, rockets, bombs, tanks, trucks, jeeps, containers for small arms, cartridge tanks, 5-gallon gasoline containers, vehicular sheet metal, steel drums and, in general, products constructed of cold-rolled steel in large and continuous production are typical of the many products whose paint finish is protected by "Granodine".

In military production, "Granodine" is used to obtain a zinc phosphate finish meeting Grade I of JAN-C-490 and equivalent requirements of other specifications.

*"GRANODINE" Trade Mark Reg. U.S. Pat. Off.



Photograph courtesy of Bureau of Ordnance, U.S. Navy Department and Metal Products Division, Koppers Company, Inc.

Typical power spray washing machine for the automatic application of a protective phosphate coating to metal parts in preparation for painting. These 5" rocket motor tubes, as well as products made of cold rolled sheet steel, are effectively phosphate coated in such equipment.

CHEMICALS ACP PROCESSES

the U. S. government, will remain with R. G. LeTourneau Inc.

R. G. LeTourneau will devote part of his time to the new firm as a consultant.

## Pneumatic Clutch Equilibrator

Diamond Machine Tool Co., Pico, Calif., announces a clutch equilibrator that is now standard equipment on their line of Diamond Multi-Max punch presses and shears.

The equilibrator is a two-part unit consisting of a heart shaped cam and an air chamber with an automatic pumping and regulating mechanism. This development, as used on punch presses, counterbalances the variable punch and die plates which vary from one setup to another, acts as a frictionless brake, and removes all the load from the clutch assembly at the time of disengagement.

## Soldering Data Given

Soldering irons and soldering iron tips for industrial applications are described in a new bulletin announced as available from the General Electric Co., Schenectady 5, N. Y.

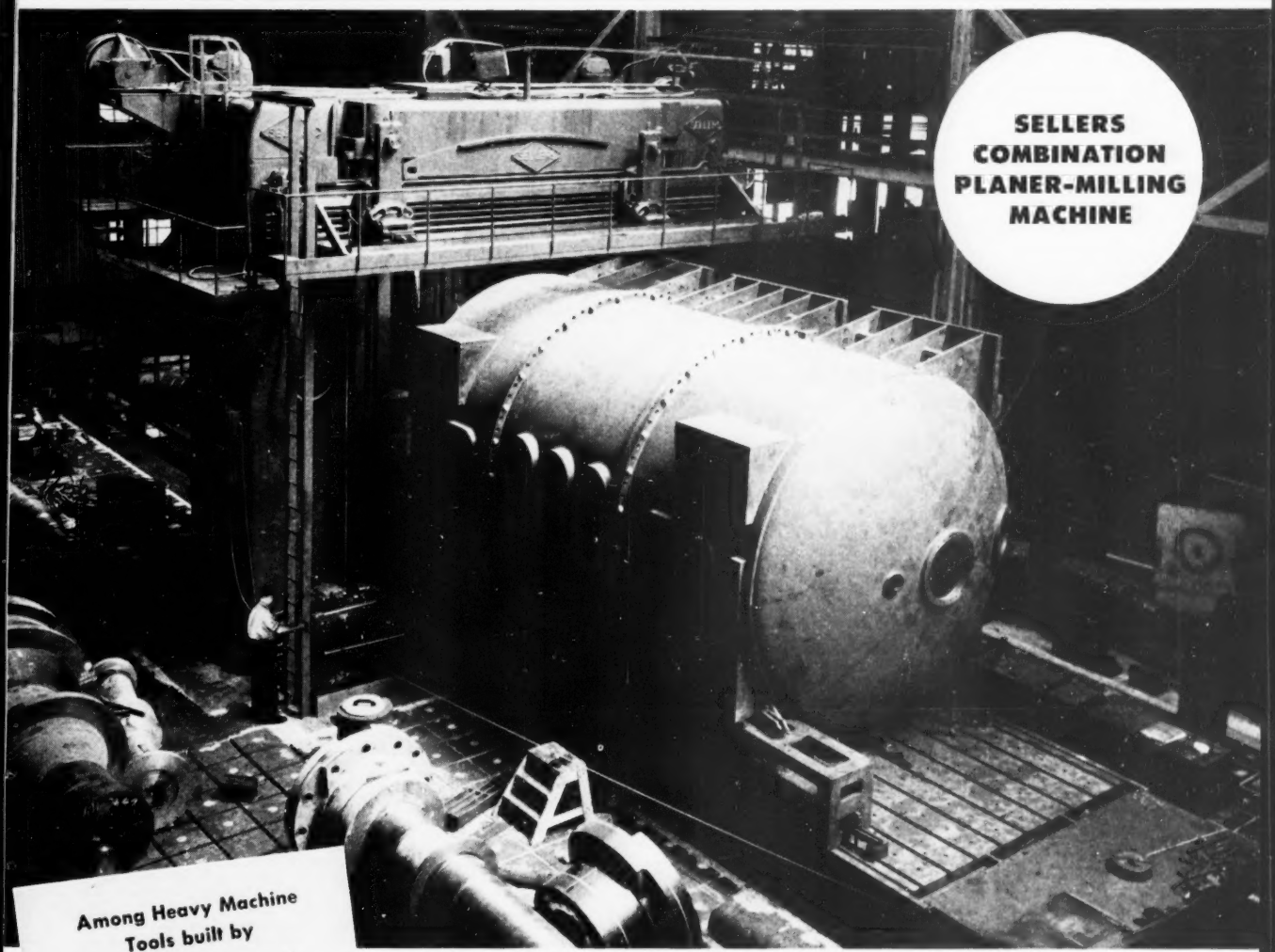
Designated as GEA-4519, the eight-page, two-color publication uses photographs, diagrams and tables to describe soldering iron construction, application, ratings and prices. Also included is a full page chart which describes the purpose of flux and which flux is best suited to the base material.

## Versatile Hard Facing Alloy

Information on applying Colmonoy No. 6, a versatile, all-purpose hard-facing alloy that may be applied by oxyacetylene or electric arc welding, hot formed as an overlay, applied in the form of castings, or sprayed on, is now available in a pamphlet by Wall Colmonoy Corp., Detroit.

Application information is accompanied by illustrated examples. Resistance to abrasion, corrosion and galling weldability and red hardness are discussed as outstanding qualities. Typical uses of Colmonoy No. 6 are listed for 42 representative parts including bearings, cams, forming dies, gages, mixing blades, pump shafts, glass plungers, valve seats, etc.

## ANOTHER GIANT CONSOLIDATED SPECIAL MACHINE FOR UNUSUALLY LARGE WORK




SELLERS COMBINATION PLANER-MILLING MACHINE PLANING A HUGE CASING

**Among Heavy Machine Tools built by Consolidated are . . . .**

- LATHES
- BORING MILLS
- DRILL PRESSES
- MILLING MACHINES
- BORING MACHINES
- COLD SAW MACHINES
- BORING, DRILLING AND MILLING MACHINES
- DRILL AND TOOL GRINDERS
- PLANERS
- SLOTTERS
- RAILROAD SHOP TOOLS
- AUTOMOTIVE TOOLS
- AND OTHER SPECIAL MACHINES

The Sellers Combination Planer-Milling Machine is used in the production of equipment for industrial and power generating applications such as, synchronous condensors, hydraulic turbine-driven generators and large motors and generators for steel mills and similar installations. Two machines in one . . . a planer and a miller . . . it eliminates the necessity of transfering work from one machine to another when both planing and milling operations are required. This huge machine is over 76 feet long, 27 feet high and weighs more than 645,000 pounds. It has the capacity to machine work 14 feet wide, 16 feet high and 30 feet long. Due to the enormous capacity of the machine, several parts to be machined may be bolted together and handled as a single unit.

**BUILDERS OF HEAVY DUTY MACHINE TOOLS SINCE 1848**

BETTS • BETTS-BRIDGEFORD • COLBURN • HILLES & JONES • MODERN • NEWTON • SELLERS

CONSOLIDATED MACHINE TOOLS

# CONSOLIDATED
## MACHINE TOOL CORPORATION

SUBSIDIARY OF FARREL-BIRMINGHAM COMPANY, INCORPORATED

**ROCHESTER, NEW YORK**

YOU'RE SAFE WITH THE

# NEW SUPER-TOUGH

## WILLSON SAFETY HAT

THE NEW WILLSON SAFETY HAT is entirely new in design, material and method of manufacture . . . tough as metal and more resilient! Here are some other outstanding features of the new Willson Super-Tough* Safety Hat . . .

**streamlined contour**—deflects objects more effectively and provides a greater safety "pocket" inside.

**new suspension design**—adjustable "hammock" headband is suspended *inside* at 6 points. No exposed rivets or lacing—no holes through hat.

**comfortably cool**—space between headband and shell provides ample air circulation for wearer.

**moisture resistant**—practically 100% waterproof and resists many caustics and acids.

**Passes all required tests with an extra margin of safety!**

Write for your copy of the new bulletin describing the Willson Super-Tough* Safety Hat.

*trademark

More than 300 Safety Products Carry This Famous Trademark

WILLSON®

*Established 1870*

WILLSON PRODUCTS, INC., 233 Washington Street, READING, PA.


## CALENDAR OF MEETINGS

**May 24-26, American Steel Warehouse Association:** Annual meeting, Hotel Shoreham, Washington. Association address: 442 Terminal Tower, Cleveland. Secretary: Walter S. Doxsey.

**May 24-27, Copper & Brass Research Association:** Annual meeting, The Homestead, Hot Springs, Va. Association address: 420 Lexington Ave., New York 17. Secretary: B. B. Caddle.

**May 24-27, National Association of Purchasing Agents:** Annual meeting, Hotel Statler, Los Angeles. Association address: 11 Park Place, New York 7. Secretary: George L. Renard.

**May 24-28, Scientific Apparatus Makers Association:** Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 20 N. Wacker Drive, Chicago 6. Executive vice-president: Kenneth B. Anderson.

**May 24-28, National Industrial Service Association:** Annual convention, Hotel Statler, New York. Association address: 818 Olive St., St. Louis 1. Executive secretary: Fred B. Whipperman.

**May 25-27, Industrial Diamond Association of America Inc.:** Annual meeting, Edgewater Beach hotel, Chicago. Association address: 124 E. 40th St., New York 16. Secretary: Athos D. Leveridge.

**May 25-28, American Society of Mechanical Engineers:** Oil and gas power conference and exhibit, Hotel Schroeder, Milwaukee. Association address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

**May 26-27, Electric Heating Committee and Michigan Section, AIEE:** Conference, Detroit-Leland hotel, Detroit. Institute address: 33 W. 39th St., New York 18. Information: W. C. Rudd.

**May 26-29, American Leather Belting Association:** Spring meeting, Skytop, Pa. Association address: 320 Broadway, New York 7. Secretary: E. R. Rath.

**May 27-28, American Iron & Steel Institute:** Annual meeting, Waldorf-Astoria hotel, New York. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

**May 27-29, American Society for Quality Control:** Annual meeting and exhibit, Convention Hall, Philadelphia. Society address: 70 E. 45th St., New York 17. Secretary: Edward B. Haden.

**May 31-June 3, American Gear Manufacturers Association:** Annual meeting, The Homestead, Hot Springs, Va. Association address: 302 Empire Bldg., Pittsburgh 22. Secretary: John C. Sears.

**June 1-13, National Metal Trades Association:** Plant management conference, Houghton Lake, Prudenville, Mich. Association address: 549 W. Randolph St., Chicago. Secretary: Louie W. Silvis

**June 4-6, Steel Kitchen Cabinet Manufacturers Association:** Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

**June 7-12, Society of Automotive Engineers:** Annual summer meeting, Hotels Ambassador and Ritz-Carlton, Atlantic City, N. J. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

**June 8-9, Malleable Founders Society:** Annual spring meeting, The Homestead, Hot Springs, Va. Society address: 1800 Union Commerce Bldg., Cleveland. Secretary: Lowell D. Ryan.

**June 9-12, National District Heating Association:** Annual meeting, Hotel Lookout Mountain, Chattanooga, Tenn. Association address: 827 N. Euclid Ave., Pittsburgh 6. Secretary-treasurer: John F. Collins Jr.

**June 11-12, Machinery & Allied Products Institute:** Washington conference, Statler hotel, Washington. Association address: 120 S. LaSalle St., Chicago 3. President: W. J. Kelley.

**June 14-19, National Association of Cost Accountants:** Annual meeting, Hotel Statler,

(*Continued on p. 141*)

# They're still talking in shops that use

# J&L "1200"

## COLD FINISHED STEEL

Shop records keep proving the logic of using **J&L "1200"** COLD FINISHED STEEL in terms of

SUPERIOR MACHINABILITY

HIGHEST QUALITY FINISHES

DEPENDABLE UNIFORMITY

EXCEPTIONAL EFFICIENCY

from machines and operations

The list of shops making J&L "1200" Cold Finished Steel a permanent specification keeps growing. Production records prove—again and again—that here is a new, free-cutting steel with exceptional machinability and uniformity.

***There are two things you should do today:***

1. Obtain complete information concerning J&L "1200" Cold Finished Steel.
2. Try J&L "1200" Cold Finished Steel in your production line.

***Here's a booklet that will help you . . .***
**SEND FOR YOUR COPY TODAY!**

J&L STEEL

**JONES & LAUGHLIN STEEL CORPORATION**

PITTSBURGH

Jones & Laughlin Steel Corporation
404 Gateway Center
Pittsburgh 30, Pa.

I'd like a copy of your booklet "J&L 1200 Cold Finished Steel."

NAME_____

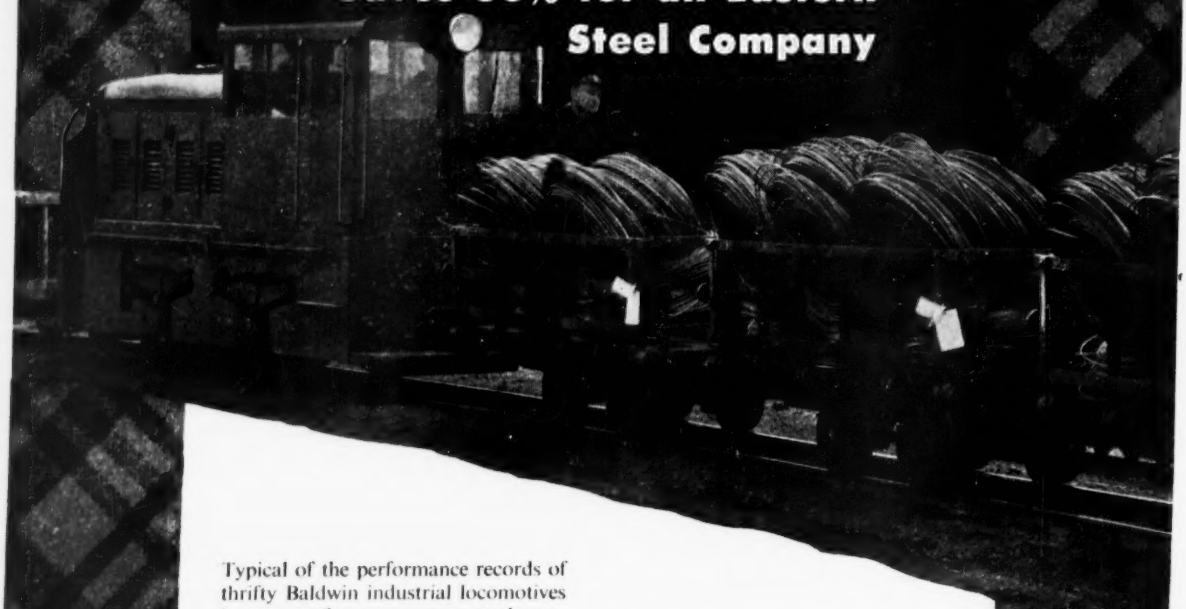
COMPANY_____

ADDRESS_____

_____

# This Thrifty Baldwin

## Saves 60% for an Eastern Steel Company



Typical of the performance records of thrifty Baldwin industrial locomotives is a report from an eastern steel company, where a Baldwin diesel switcher is employed in materials handling averaging 120 tons a load.

"We can take in *one* trip, materials that previously may have required 2 to 3 trips to transport from one part of our plant to another."

*This represents a saving in materials handling costs of approximately 60%* by using a Baldwin diesel to do the job.

This steel company also reports: "Maintenance has not been a problem."

"From the standpoint of handling ease, the diesel locomotive is safer and easier to operate."

Because Baldwin industrial locomotives are thrifty . . . representing more economical materials handling, lower maintenance, greater operating flexibility . . . they can check mounting haulage costs in your plant.

If *you* are interested in more economical switching operations, write today for Bulletin DMH-300 to:

Dept. 1646, Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.

BALDWIN · BLH · LIMA-HAMILTON

**BALDWIN - LIMA - HAMILTON**

INDUSTRIAL LOCOMOTIVES

*. . . they're thrifty!*

(Continued from p. 138)

Los Angeles. Association address: 505 Park Ave., New York 22. Secretary: Arthur B. Gunnarson.

**June 15-18, Radio-Television Manufacturers Association:** Annual meeting, Palmer House, Chicago. Association address: 777 14th St. NW, Washington 5. Secretary: James D. Secrest.

**June 15-18, American Electroplaters' Society:** Annual meeting, Benjamin Franklin hotel, Philadelphia. Society address: 445 Broad St., Newark, N. J. Secretary: D. Gordon Foulke.

**June 15-19, Basic Materials Conference and Exposition:** Grand Central Palace, New York. Information: Banner & Greif, New York 19.

**June 15-19, American Institute of Electrical Engineers:** Summer general meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

**June 16-19, American Welding Society:** National spring technical meeting & welding and allied industry exposition, Shamrock hotel and Hall of Exhibits, Houston. Society address: 33 W. 39th St., New York 18. Secretary: J. G. Magrath.

**June 17-19, American Management Association:** General management conference, Hotel Statler, New York. Association address: 330 W. 42nd St., New York.

**June 22-25, National Industrial Advertisers Association:** Annual meeting, William Penn hotel, Pittsburgh. Association address: 1776 Broadway, New York. Executive secretary: Blaine G. Wiley.

**June 22-27, Railway Supply Manufacturers Association:** Exhibit and convention, Atlantic City. Association address: 60 E. 42nd St., New York 17. Secretary: A. W. Brown.

**June 28-30, Alloy Casting Institute:** Annual meeting, The Homestead, Hot Springs, Va. Institute address: 32 Third Ave., Mineola, N. Y. Secretary: E. A. Schoefer.

**June 29-July 3, American Society for Testing Materials:** Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Society address: 1916 Race St., Philadelphia. Secretary: Robert L. Painter.

**July 23-24, Truck-Trailer Manufacturers Association Inc.:** Annual summer meeting, Edgewater Beach hotel, Chicago. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulse.

## Industry Needs Horse Sense

American industry can multiply the effectiveness of its technical manpower by replacing the "ivory tower perfectionism" of some engineering attitudes with "old-fashioned horse sense."

This proposition was placed before the American Management Association's manufacturing conference in New York recently by George M. Muschamp, engineering vice president of Brown Instrument Division, Minneapolis-Honeywell, a company which earns much of its living putting new perfection into old processes.

## Aluminum Bars-Plates Listed

A brochure on aluminum cast plate and bar has just been published by Reynolds Metals Co., Louisville 1, Ky. It describes this new product which is now being made available for use in tools, dies, jigs and fixtures. Copies are available free of charge.


"Automatic" SPRAY Sprinklers

. . . no better FIRE PROTECTION at any price!

HERE'S important news for insurance underwriters; building owners; safety, maintenance and planning engineers.

Now, with *new*—more efficient "Automatic" SPRAY Sprinklers, it is possible to obtain substantially improved fire protection *at no extra cost.* Leading insurance organizations consider them superior to conventional approved sprinklers. They are suggested for use on all new construction, and can easily be interchanged with obsolete devices on old style systems without expensive piping rearrangement.

In short, absolute fire safety with "Automatic" SPRAY Sprinklers is worth far more than it costs. It's a long-lasting value that knows no measure.

Better get the facts on "Automatic" SPRAY Sprinklers, the most important advancement of the century in the science of fire protection. Fill out and mail the coupon below for illustrative literature.

"Automatic" Sprinkler

CORPORATION OF AMERICA

YOUNGSTOWN, OHIO

Offices in principal cities of North and South America

"AUTOMATIC" SPRINKLER CORPORATION OF AMERICA

DEPT. E, Youngstown 1, Ohio

SEND US BULLETIN 69, "AUTOMATIC" SPRAY SPRINKLERS.

NAME .....

TITLE .....

COMPANY .....

CITY ..... ZONE ....

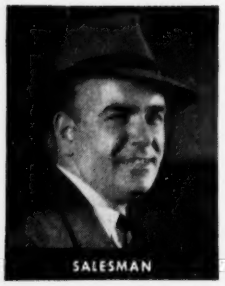
STATE .....

# TEAM SERVICE by U·S·Steel Supply is accurate!

WAREHOUSE SUPT.

TELEPHONE SALESMAN

TRAFFIC MANAGER

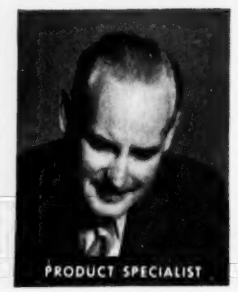

SALESMAN

DISTRICT MANAGER

RECEPTIONIST

OFFICE MANAGER

CREDIT MANAGER


PRODUCT SPECIALIST

WAREHOUSEMAN

ASS'T. DIST. MANAGER

INVENTORY ANALYST

## "Quartermaster Extraordinary" of the steel supply business

● The principal job of each Inventory Analyst is to keep his warehouse well stocked so that we are always ready to deliver the kind of steel you want in the shortest possible time. He is, in effect, your purchasing agent for steel. His specialized knowledge of steel sources, especially the stocks in our 15 warehouses, is of particular value to you when you want to locate special types of steel. His efficient buying helps us maintain a schedule of reasonable prices.

Whether your steel requirements are ordinary or special, small or large, contact your U. S. Steel Supply salesman for the most accurate service.

# U.S. STEEL SUPPLY

**DIVISION**

*General Office*

**208 So. La Salle St., Chicago 4, Ill.** **Warehouses and Offices Coast to Coast**

UNITED STATES STEEL

# NEW PRODUCTS and equipment

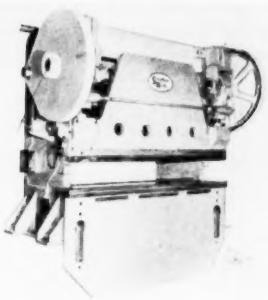
**Reply card on page 147 will bring you more information on any new products and equipment in this issue**

## Expanded Press Brake Line

*. . . forms steel ¾-inch thick*

This 400-ton capacity press brake is an addition to the manufacturer's line of sheet metal forming equipment. Called model 400-PB-8, the unit forms steel up to ¾-inch thick and 8 feet wide.

Operator has complete control at all times with instant stopping of ram at any point. Pneumatic clutch and separate brake, operating controls for cycling and inching, plus control for a single work stroke



with return of ram to up position are included in the control setup.

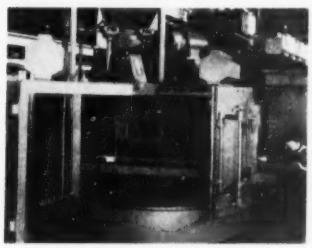
Force is exerted along centerline of side frame and directly down to the bed on its supporting frame leg. This straight-line power push eliminates side-frame twisting, minimizes deflection and helps maintain alignment between ram and bed. Automatic force feed lubrication is provided to all major points. Struthers Wells Corp., Dept. ST, Titusville, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

## Redesigned Cleaning Table

*. . . small table, long sections*

Addition of an access door to the model LK Rotoblast cleaning table increases machine flexibility. With this accessory, it is possible to blast long sections in a table of small diameter. This is particularly desir-



able when the usual run of work in the cleaning room is in a fairly stable size range but an occasional larger piece requires cleaning.

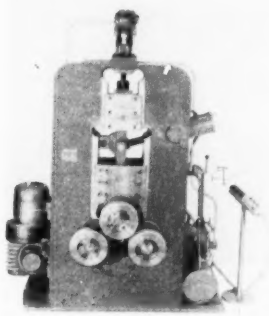
Flexible rubber curtains over the access opening prevent abrasive grit from flying into the room. Pangborn Corp., Dept. ST, Hagerstown, Md.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

## Improved Bending Machine

*. . . one pass for short bends*

This roll bending machine is made of rolled steel plates and sections, electrically arc welded with all welds stress relieved. Maximum



capacities, depending on size of rolling machine: Pipe or conduit 1¼ to 3½ inches; steel tubing 1¾ to 4 inches OD.

Machine has fast action, repeat positioning roll adjustment. When initial action of bending roll is complete, reindexing is controlled accurately by hydraulically-actuated toggle mechanism. Short radius bends can be made in rigid material in one pass through the rolls. Wallace Supplies Mfg. Co., Dept. ST, 1300 Diversey Parkway, Chicago 14, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

## Electric Drill Converter

*. . . creates impact screw driver*

This Dril-O-Driver unit converts all electric drills into speedy impact screw drivers. Cone drive construction permits the operator to control force and speed from 0 to full speed of the electrical drill. Drilo Corp., Dept. ST, 201 E. Carson St., Pittsburgh 19, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

## Overhead Cantilever Carrier

*. . . handles loads beyond crane*

Overhead carrier with cantilever arrangement permits load handling beyond the end of the crane on which the carrier operates. The carrier is built to take care of situations that require handling in areas between roof-supporting pillars that cannot be covered by cranes, or for reaching through doorways.

Extension permits the hoist to reach out as much as 2 feet, 1½ inch beyond the end of the crane. When it is necessary to travel the crane for some distance on its runway, the carrier is moved from the

# If the question is perforating . . .

Ever stop and think that the answer to your design problem may be simple perforations? Whatever material you're working with, if it's metal, masonite, rubber, plastic, hard or insulated board for decorative or display usage, Hendrick can help you. Over a period of many, many years Hendrick has built up the largest stock of dies commercially available.

# the answer is HENDRICK!

If you are faced with the need for perforated materials or if you would like more information on how perforating can enhance the sales appeal of your products, get in touch with Hendrick today.

**Hendrick**
MANUFACTURING COMPANY

30 DUNDAFF ST., CARBONDALE, PA. • *Sales Offices in Principal Cities*
Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

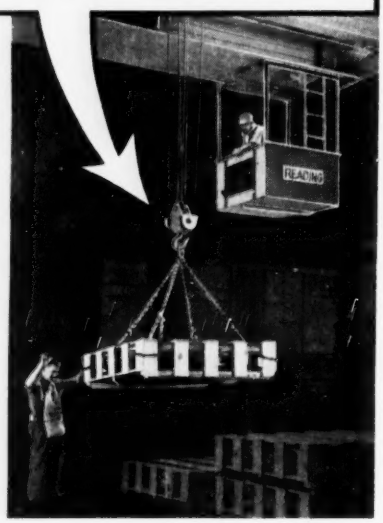


# They picked a "READING" CRANE to shorten their load handling cycle ...

When this well-known stove manufacturer wanted to speed up assembly, he put his problem to "Reading" engineers. Installation of a 10-ton, double I-beam, cab-controlled "Reading" crane brought even greater results than expected. There are good reasons.

All "Reading" electric cranes — cab or floor controlled— are "job tailored". There is no extra cost for this special engineering service. Actually, costs go *down*, because motor, trolleys, brakes and hoisting units are assembled into a crane that fits your needs exactly.

You get greater operating efficiency. More accurate spotting is possible. Precise speed control is assured. Moreover, maintenance costs are minimized because each unit can be removed and serviced individually without dismantling entire crane. Get complete information by writing for our latest 16-page bulletin, "The *Why* and *How* of Faster Production".




READING CRANE & HOIST CORP. • 2102 ADAMS STREET, READING, PA.

Chain Hoists
Electric Hoists
Overhead
Traveling
Cranes

**READING CRANES**


## NEW PRODUCTS and equipment

crane end to permit safe clearance of the columns. Unit illustrated has 1500-pound capacity; other carriers can be made to fit specific

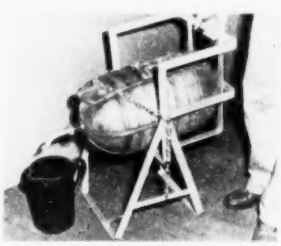
conditions. Cleveland Tramrail Division, Dept. ST, Cleveland Crane & Engineering Co., Wickliffe, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

### Simplified Tilter

*. . . prevents spill, splash*

Meeting needs for a smaller, simplified unit, this tilter is suitable for handling 5 and 6½ gallon containers. Its functions include preventing accidents caused by spilling, splashing and carelessness in pour-



ing liquids. A chain holds the container in position when tilted.

Pouring spout assures a smooth flow without spurts or splashes. Made of acid-resistant rubber and plastic tubing, the unit has flow capacity of slightly more than 1 gpm. General Scientific Equipment Co., Dept. ST, 2700 W. Huntingdon St., Philadelphia 32, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

### Heavy-Duty Cutoff Machine

*. . . regular or free-hand work*

Model M75 cutoff machine is an interchangeable unit that can be used for regular cutoff work or converted to free-hand cutting of gates and risers from nonferrous foundry

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*are your tools*

## FOR MORE TONNAGE THROUGH THE ROLL TRAIN

MOLYBDENUM CHILLED IRON ROLLS
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TONNAGE

SUPERIOR "X" ROLLS
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SPECIAL PROCESS ROLLS
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ATLAS, ATLAS "B" AND
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*may we have the opportunity of studying your requirements and submitting our recommendations*

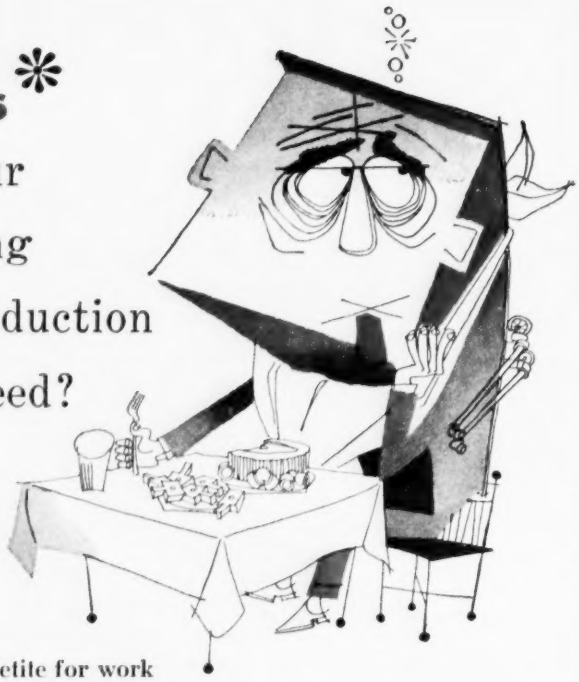
MANUFACTURERS OF
ROLLS AND ROLLING MILL EQUIPMENT
FOR THE IRON, STEEL AND
NON-FERROUS
INDUSTRIES

ROLLS DIVISION OF BLAW-KNOX COMPANY, PITTSBURGH, PA.

does

**coil-itis** *

have your processing tank production off its feed?



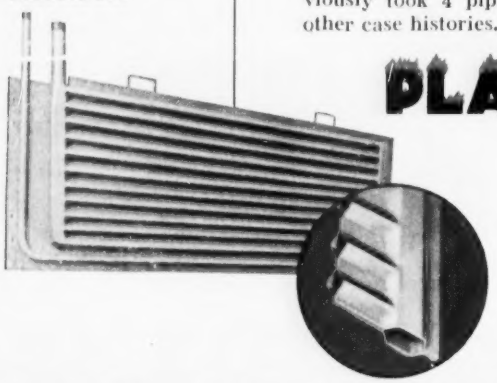
When the appetite for work of your heating and cooling processes diminishes, the trouble may well be coil-itis. For, downtime due to pipe failures and limitations can seriously delay your production flow. Switch to Platecoils, the new tonic for production, as revolutionary as the new wonder drugs. Platecoils take 50% less tank space leaving more room for greater payload. They heat or cool 50% faster. They simplify maintenance and save hours of downtime. Equally important, Platecoils cost as much as 50% less in the first place. Platecoils cure production troubles involving heat transfer and give production a shot in the arm.

**Write for Bulletin P72 today!**

**PLATECOILS SAVE 50% IN HEAT TRANSFER COSTS**

**PLATECOILS ELIMINATE A 6-TO-8 HOUR-A-DAY CHIPPING JOB**

At Sealed Power Corp., installation of Platecoils has completely eliminated a 6-to-8 hour-a-day chipping job. Three Platecoils now heat a tank that previously took 4 pipe coils. Ask about other case histories.



**PLATECOIL**

**REPLACES PIPE COILS**

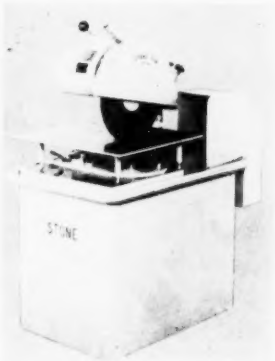
* Coil-itis — Diagnosed as tank heating and cooling problems. Platecoils — the prescription for solving pipe coil problems.

**PLATECOIL DIVISION, KOLD-HOLD MANUFACTURING CO., LANSING 4, MICHIGAN**

## NEW PRODUCTS and equipment

castings. When used as a regular cutoff device, either abrasive blades for cutting ferrous materials or semi high-speed steel for cutting nonferrous materials can be used.

Capacity as a cutoff machine is



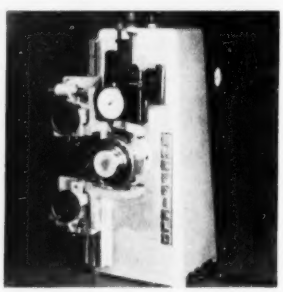
2½ inches for solids, 4 inches for pipe, tubing and structurals. It is equipped with a full 7½-hp geared-in-head motor. Direct drive, without use of belts or pulleys, delivers full power to cutting wheel. Stone Machinery Co. Inc., Dept. ST, 525 Fayette St., Manlius, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

### Radial Play Measuring Unit

*. . . checks bearing clearance*

This pivotal arm radial internal clearance measuring instrument makes possible easy and accurate



measuring of radial play in ball bearings. It can be used for meas-

**USE A REPLY CARD**

Just circle the corresponding number of any item in this section for more information.

# INFORMATION

## AVAILABLE FOR THE ASKING

### 69. X-Ray Gage

Sheffield Corp.—16-page catalog MY-52-3 gives complete and fully illustrated data on the Measuray x-ray noncontact gage for continuous or intermittent measurement of strip or sheet stock. It can be applied to hot and cold metals and nonmetals.

### 70. Air Devices

Mead Specialties Co. — Specifications, diagrams, photographs, application information and various other data are included in "Mead Industrial Air Power Catalog-1953." Air cylinders in a wide range of types and sizes and many air-operated devices, such as presses, collet, fixtures, work feeders, impact hammers, valves, vises, etc. are specified.

### 71. Vises & Clamps

Wilton Tool Manufacturing Co. — Twenty-eight pages of specifications, data and photographs on a line of clamps and vises are contained in catalog No. 109. An extremely wide line is described. Powrarm work positioners are featured. Spare parts are included.

### 72. Mill Screw Lubricant

Brooks Oil Co. — How Leadolene lubricants are suited for application mill screws and nuts is told in 4-page folder "Screwdown Nuts and Screws are Difficult Lubrication Problems." Advantages are related as is increase in service life.

### 73. Control Panels

Industrial Control Panel Co.—2-page illustrated catalog sheet relates advantages, descriptions and uses of Pantro industrial control panels. It is punched for ring binders.

### 74. Strainers

Bethlehem Steel Co.—Catalog 331 of 24 pages contains photos, specifications, diagrams and general data on line of simplex and duplex strainers for removing specific impurities held in suspension in oil and water lines and in systems carrying acids, alkalies, organic chemicals, etc. Eight designs are listed and baskets for them and oil heaters are described.

### 75. Ground Flute Reamers

Lavallee & Ide, Inc.—Between the stiff covers of 40-page catalog 53 are complete specifications and illustrations of wide range of standard ground flute reamers, with an alphabetical index for quick reference. A supplementary net price list is also illustrated for identification and indexed for quick reference.

### 76. Plenty of Tin!

Malayan Tin Bureau — "There is Plenty of Tin" is a highly informative illustrated booklet of 20 pages which tells the reader all about the metal—its production, source, available supplies and its many uses. Tables are liberally used to present production, distribution, consumption and price data.

### 77. Refractory Brick & Balls

McDanel Refractory Porcelain Co. Latest price lists on Super mill lining brick and grinding balls and on protective and insulating tubing are offered together with 4-page descriptive folder.

### 78. Electric Tachometers

Bristol Co.—Describing a line of recording and indicating electric tachometers, 20-page bulletin No. S1402 is liberally illustrated with photos and drawings showing methods of application, reproductions of actual chart records and dimensions. Instruments include models for measuring speed of rotation or travel, processing time, speed ratios, sum or difference of speeds and speed averages.

5-25-53

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### 79. Cone-Drive Gear Sets

Michigan Tool Co., Cone-Drive Div.—Dimensional drawings on pinions and gear blanks of standardized Cone-Drive gear sets, plus tabulated tool chart data and horsepower ratings are featured in 16-page catalog 700. Center distances on series listed range from 2 to 18 in. and backlash tolerances from 0.003-0.005 to 0.020-0.025.

### 80. Production Dies

B. Jahn Mfg. Co.—"The Story of B. Jahn Production Proved Dies" is brochure which illustrates dies being 'production proved' by running up to 50,000 parts for production line use before die is shipped. Company facilities are described and problems overcome are shown.

### 81. Clamps and Fixtures

Lodding Inc.—The catalog "Clamp Assemblies and Fixture Details" contains 58 pages of dimensional drawings and specifications on such items as washers, nuts and bolts, hand cams and wheels, screws, studs, knobs and lever clamps. All components necessary to standardize tool engineering practice are grouped for user's convenience.

### 82. Brakemotors & Brakes

Elliott Co., Crocker-Wheeler Div.—Mounting and frames available, dimensions and how to select Crocker-Wheeler brake motors and brakes are detailed in 4-page data folder PB 9300-1. Features of the magnetic brake and how it operates are presented.

### 83. Oil Burner

Bloom Engineering Co.—Designed for low capacity operations over a wide range of fuel input, the LP-16-oz atomizing air oil burner is described in 4-page catalog C-220. Dimensional drawings, applications and specifications are fully given.

### 84. Military Packing

General Box Co. — Here is "The Right Answer to Your Military Packing Need" in a 12-page illustrated brochure which shows types of military parts that are packed and shipped in various General wire bound containers.

### 85. Valves & Fittings

Cooper Alloy Foundry Co.—A line of stainless steel, nickel and monel valves and fittings to control corrosive liquids and gases is subject of 50-page catalog No. 52. Engineering drawings with dimensions are given on each of the many items, together with specifications and application suggestions. Tables of corrosion resistance and materials reference are given.

### 86. Cold Shaping Steel

Mullins Manufacturing Corp. — Called "Koldflo Product Design Guide," a 28-page photo-caption style booklet gives an interesting look at the wide variety of products that may be economically produced by the Koldflo pressing process. No machining is required, parts being complete as they come from the presses.

## EDITORIAL REPRINTS:

### 87. Better Materials Handling

Estimates of the handling bill vary, but most everyone agrees on its importance in the cost of the finished product. Finding the better way for handling of materials is well worth the expense. You might start by reading STEEL Reprint "Materials Handling, It Can Cost You . . . or Pay You."

### 88. Production Flow

In STEEL reprint entitled "Production Flow Gets Green Light" is discussed the planning and layout of a plant before and during building to facilitate materials handling. System used in planning Atwood Vacuum Machine Co.'s new plant is cited. Result is up to 80 per cent cut in handling distances.

### 89. Arc Furnace Smelting

Possibilities of making steel in the arc furnace grow as experimental data points to operating advantages. Installation is cheaper, furnace combinations are more flexible and more electric power is available in more places at reasonable cost. H. S. Newhall points out other advantages in STEEL reprint "Electric Ore Smelting Passes Tests."

### 90. Handling Standards

By agreeing on standards for fork trucks, pallet trucks, tractors and cranes as well as their components and mountings, manufacturers are gaining through interchangeability and mutual economies. R. A. Moody, Chief, Office of Standardization Defense Supply Management Agency, discusses industry's gain in this respect in STEEL reprint, "Materials Handling Standards."

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| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |

**STEEL**
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5-25-53

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urement on a production basis as well as for inspecting incoming shipments or setting up control before assembly.

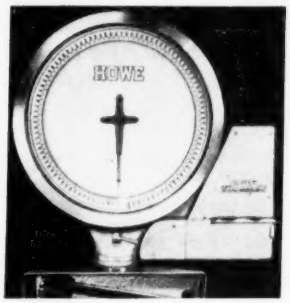
The instrument has two easily adjustable, air-operated pivotal load bearing arms that alternately exert upward and downward pressure on the bearing. At the same time it measures successive movements of the outer ring to determine amount of radial play in that position. Other features: Automatic ball shakedown into bottom of groove; direct readings without use of masters. Sheffield Corp., Dept. ST, Dayton 1, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

## Printing Weight Recorder

*. . . integrates weighing, printing*

Simplified mechanical weight recorder, the Mechanoprint, is built as an integral part of the manufacturer's tape-drive dial. Printer




is located conveniently on the right side of the dial head, where a simple touch of push bar causes weight to be printed. Total time elapse, from actuation of printing bar until recorded weight is made, is about 1 second.

Printing can also be controlled by a trip switch on a conveyor line, on a monorail system and by other methods. It can be adapted to operate with a hand crank in localities where electric current is not avail-

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Save Metal
Save Labor
NILSON FOUR-SLIDE
Wire and Ribbon Metal
FORMING MACHINES
Mounting production costs are driving firms out of the competitive picture. Too much scrap metal! Too many single operation machines! Too many operators! This whole picture can be changed to a highly profitable operation. Install a NILSON combination press and 4-Slide forming machine. This machine takes wire or ribbon metal directly from the coil, straightens, feeds, pierces, blanks, swages, stamps, or coins, cuts off and forms . . . automatically in one quick precise operation. See the new picture? . . . Increased production! Minimum scrap metal! One machine for all operations! One operator!
For specific recommendations . . . send details of your operation.
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# PITTSBURGH GEAR *Process*

## *Guarantees Longer Life*

Only PITTSBURGH **Armored Gears** are made according to the exclusive PITTSBURGH formula which covers a proven combination of metal, machining, AND heat-treating. It is not enough to use tool steel, which often will not stand shock loads. PITTSBURGH selects the best metal for the particular gear body, then machines it, and heat-treats the wearing surfaces to give ultimate life.

This process gives you gears that have tough, ductile cores, and teeth that wear almost interminably. PITTSBURGH **Armored Gears** are guaranteed to give five times the life of untreated gears, one to one and one-half times the life of oil-treated gears, and equal or longer life than any other gear in identical service. You can identify them by their "**Pittsburgh Purple**" corrosion preventive coating.

You'll never know how good PITTSBURGH **Armored Gears** are until you try them. Send us your specifications or give us details of service requirements so that we can make recommendations.

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CRANE WHEELS

PITTSBURGH GEAR COMPANY

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Phone: ATlantic 1-9950

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able, or where explosion hazards are present. Howe Scale Co., Dept. ST, Rutland, Vt.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

### Nickel Bond Diamond Wheel

*. . . economies in cost-per-tip*

Electroplated nickel bond diamond wheel line is reported to gain economies in cost-per-tip carbide tool grinding. The bonding process deposits electrolytically a dense nickel bond around each diamond particle to hold diamonds firmly.

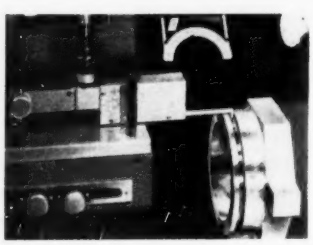
Nonporous nickel bonding material prevents wheels from loading. The process requires use of only one layer of diamonds, which are applied to each wheel in the greatest concentration for the nickel to hold to make the wheel less susceptible to damage by gouging and careless handling. Wheels are available in a complete size range. Ohio Metal Working Products Co., Dept. ST, 1836 Euclid Ave., Cleveland 15, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

### Surface Roughness Tracer

*. . . measures grooves, shoulders*

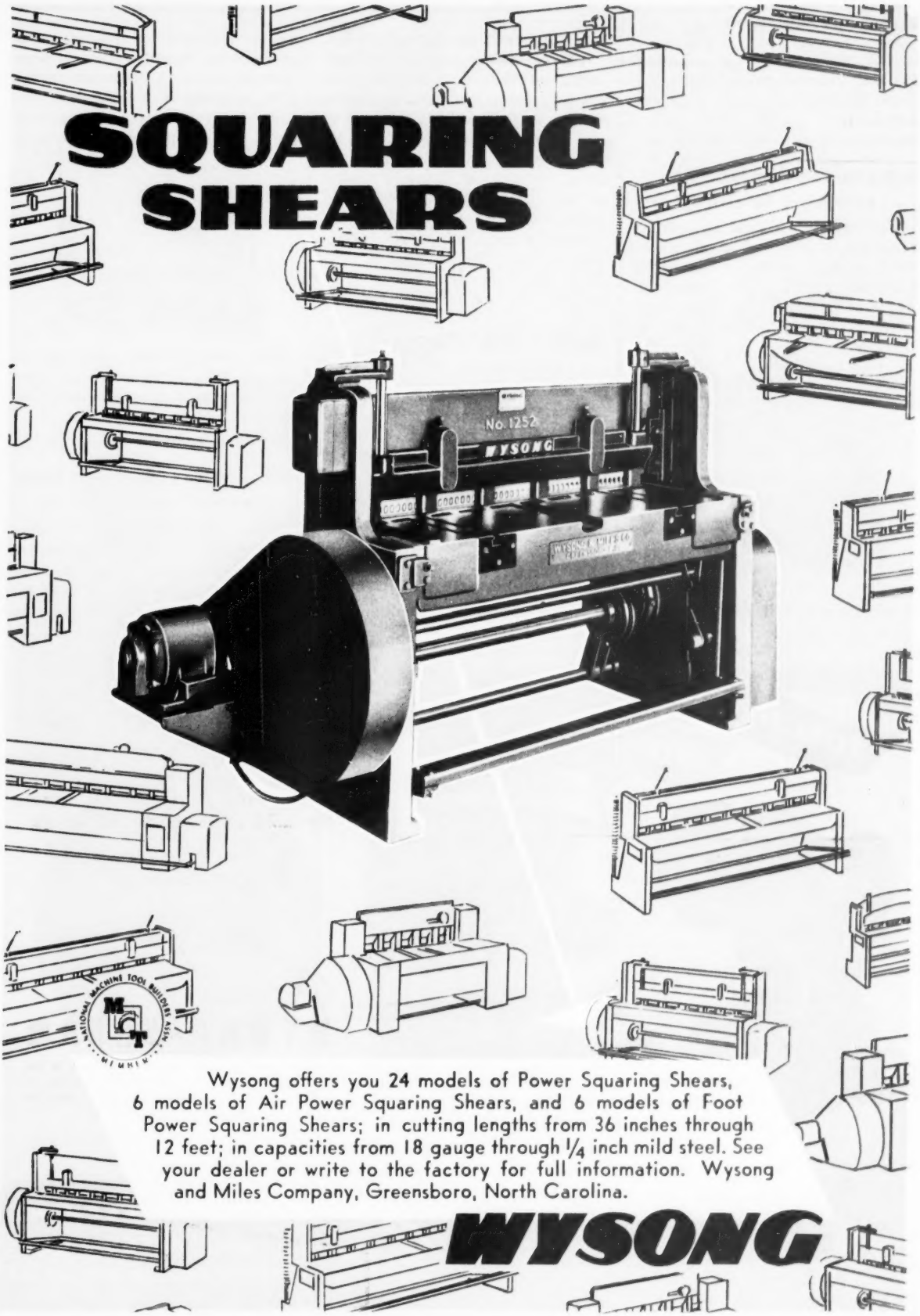
Profilometer type KB tracer measures surface roughness across the bottom of flat-bottomed grooves to ¼-inch depth and behind shoulders to ¼-inch height. When measuring crosswise, it permits 1/16-



inch length of trace in grooves 5/32-inch wide, and greater trace length in wider grooves.

To reach into grooves and over shoulders, the tracer has no skids. Tracer point is at the bottom of a vertical extension at the end of a long beam. This construction requires that it be supported and

# SQUARING SHEARS




Wysong offers you 24 models of Power Squaring Shears, 6 models of Air Power Squaring Shears, and 6 models of Foot Power Squaring Shears; in cutting lengths from 36 inches through 12 feet; in capacities from 18 gauge through 1/4 inch mild steel. See your dealer or write to the factory for full information. Wysong and Miles Company, Greensboro, North Carolina.

**WYSONG**

## NEW PRODUCTS and equipment

moved mechanically by a Linear Pilotor. Micrometrical Mfg. Co., Dept. ST, 345 S. Main St., Ann Arbor, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

### Improved Selenium Rectifier

*. . . advantages for electroplaters*

Electroplaters should find advantages in this improved selenium rectifier, built to deliver a full wave, six-phase current with theoretical ripple of 4.5 per cent. Alternating current input is dual-220/440 v, three phase, 60 cycle. Continuous operation at full capacity is guaranteed 24 hours a day for a full year.

The rectifier is available in self-contained and remote control models. These transformers operate continuously at temperatures up to 25° C above ambient. A single-knob control switch has 22 positions, covering entire voltage range or any part of it. Heavily-coated selenium stacks provide corrosion resistance and fungus proofing. Hanson-Van Winkle-Munning Co., Dept. ST, Matawan, N. J.

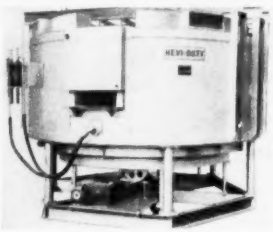
FOR MORE DATA—CIRCLE REPLY CARD NO. 13

### Rotary Hearth Furnace

*. . . continuous at 2500°F*

Designed to operate continuously at temperatures to 2500° F, this furnace has a rating of 260 kw with 1500 pounds per hour capacity. Silicon carbide rod-type heating elements, arranged vertically, can be replaced easily even while the furnace is hot. Protective atmosphere is used to maintain a bright surface during hardening and to prevent decarburization of special alloys.

Variable speed drive mechanism can be adjusted for desired speed of rotating hearth to match production needs. Continuous operation is achieved as the operator loads the furnace by placing cold parts on 7-foot diameter hearth



which slowly rotates, then removes heated work as it passes the door opening. Hevi Duty Electric Co., Dept. ST, Milwaukee 1, Wis.

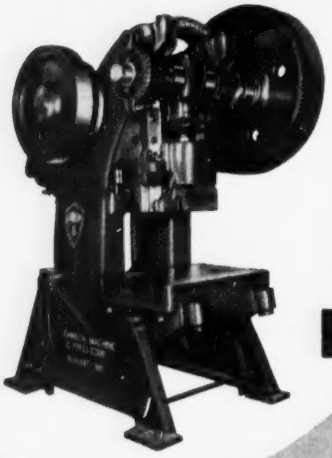
FOR MORE DATA—CIRCLE REPLY CARD NO. 12

### High-Capacity Condensate Pump

*. . . requires no pit*

This condensate pump requires no pit even though return pipes are as low as a foot above the floor. The unit handles 8000 sq ft of radiation at 20 psi. It contains an


EXTRA SERVICE
EXTRA SAFETY
15 MODELS
16 to 90 Ton
JOHNSON
Bonus Built
POWER PRESSES
Will give more service for your production dollar because you can handle larger jobs on smaller presses.



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Heavier construction, extra safety features, a list of satisfied users are reasons for an ever-increasing demand for Johnson presses. There's a press for your job, too. Write us today.

FAST, ACCURATE AND POWERFUL HYDRAULIC SHEARING IS HERE...
for mild steel up to 10 gauge

the HYDRA-SHEAR
The Hydra Shear surpasses all others in its field for smooth operation . . . no gears or clutch . . . less curl and burring . . . cannot be overloaded. Write for specifications.

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# For quality control you can be proud of

When you have inspection and quality control procedures you're proud enough of to talk about, they must be good.

These three advertisements were published by firms justly proud of their methods. All three use Kodak Contour Projectors as an example of the type of care they exercise in producing products of uniformly high precision.

Optical gaging with a Kodak Contour Projector provides a fast, accurate method of production measurement and inspection. Operators can get the work out in a hurry—little training is required. Accessories are available to make possible measurement of the most complex shapes.

To see how a Kodak Contour Projector can help you reduce inspection costs, improve quality, send for our new 12-page booklet. It gives you details of both the Model 2A, for precision micrometry, and the Model 3, for fast, routine gaging. For your copy, write to:

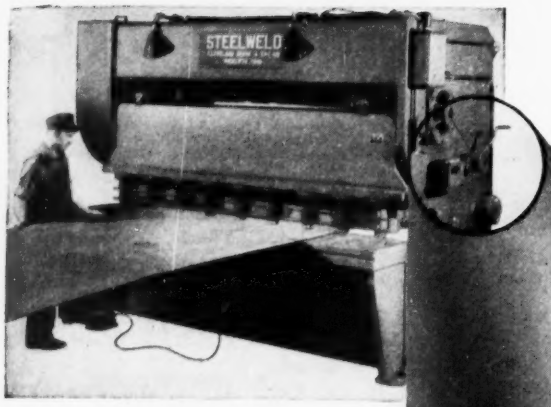
Industrial Optical Division
**EASTMAN KODAK COMPANY**
Rochester 4, N. Y.

## the KODAK CONTOUR PROJECTOR

Optical Gaging

A new sound movie, Optical Gaging, shows how to simplify complex inspection problems. We'll tell you how to get it for a showing.

Kodak
TRADE-MARK




# THE *Right* KNIFE CLEARANCE FOR EVERY PLATE THICKNESS

## ONLY STEELWELD SHEARS HAVE THIS SIMPLE KNIFE ADJUSTMENT

It is simple, fast and easy to adjust the knife clearance on a Steelweld Pivoted-Blade Shear to suit every plate thickness. No bolts to loosen! No bed to move! No feeler gauges required!

Only turn a crank and watch a dial. That's all there is to it. The large easily-read dial indicates the clearance between knives in thousandths of an inch and also shows the plate thickness that may be cut with any knife setting. Because of the ease with which knife adjustments are made, every cut made on Steelweld Shears is the best cut possible—straight, smooth, accurate. And of importance, knives remain sharper for longer periods.

Steelweld Shears are built for thicknesses of 12 gauge to 1¼ inch and for lengths of 6 to 18 feet.

*GET THIS BOOK!*

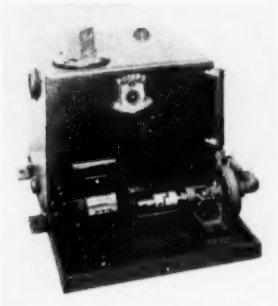
CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.
*7811 EAST 282ND STREET • WICKLIFFE, OHIO*

**STEELWELD PIVOTED BLADE SHEARS**

all-bronze centrifugal pump and flexible couplings that isolate pump from motor and piping to prevent pipe cramp, misalignment, wear and noise.

Power is supplied by a ¼-hp, 115 v, single-phase motor. The unit



has large capacity safety factor providing for at least a one to three on-off operating cycle with tight traps. Walter H. Eagan Co. Inc., Dept. ST, 2336 Fairmount Ave., Philadelphia 30, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

## All-Metal Spray Gun

*. . . operates without compressor*

This trigger-action, lightweight, all-metal electric spray gun is suitable for work including painting, refinishing, touch-up work, rustproofing and stenciling. It delivers more than 90 psi at 7200 strokes per minute.

The gun operates without a compressor; a simple alternating current outlet is all that is required for immediate use. Waldorf Sales Co., Dept. ST, 363 Central Park Ave., Yonkers, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

## Overlay Welding Machine

*. . . spiral or index feed*

Model F universal welding machine makes use of standard welding head employing a continuously-consumable electrode. This head can be adjusted easily with respect to the shell. Machine is marketed for overlay welding rotating bands on projectiles. Diversity of rotating bands can be applied by spiral




# Rolling with the Punches..

*Drum segment assembly, 17½" dia. x 46" long—rough, sandy steel forging. Note the many interrupting cavities on the surface that give the tool its bumps.*

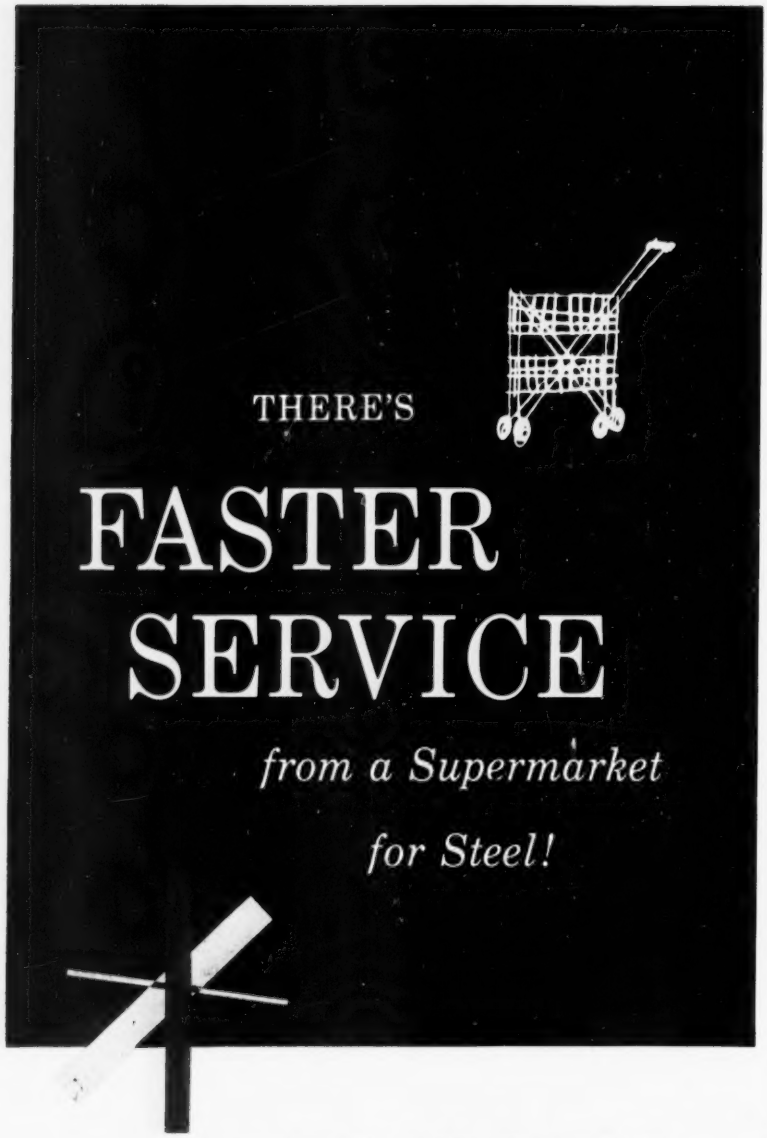
**On the jump cut job illustrated, a Kennametal clamped-tool is a 6 to 1 favorite over a HSS tool . . . takes thousands of bruising blows on its nose without breaking down; cuts miles of forged, sandy steel without wearing out.**

**Here are the comparative performances:**

**HSS tools took 12 hours to complete 2 cuts, and were reground 4 to 8 times. Kennametal tool Style BRH32, Grade K2S, operating at 6 times the speed, does the same work in 2 hours. Its clamped-on tip requires only 2 regrinds.**

**Great strength and ruggedness are required in a cutting tool, to enable a lathe to keep rolling on interrupted cutting. These qualities, inherent in Kennametal tools, are equally valuable for light, continuous cutting jobs. Ask our Field Engineers to demonstrate. Kennametal Inc., Latrobe, Pa.**

KENNAMETAL
CEMENTED CARBIDE TOOLING
THAT INCREASES PRODUCTIVITY

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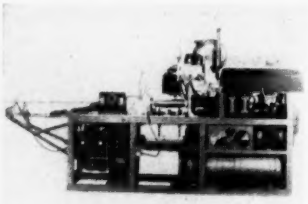
## NEW PRODUCTS and equipment

or index feed while shell is rotated between self-centering chucking adapters. Welding generator is incorporated in the machine's frame.

A cooling tube synchronized with



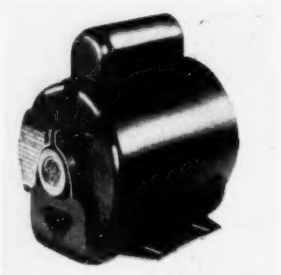
the welding head provides compressed air or water cooling. Automatic loading and unloading, after each shell is processed, makes the machine adaptable for production line work. Morley Machinery Corp., Dept. ST, 1239 University Ave., Rochester 7, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

### Fractional Horsepower Motors

***. . . smaller, lighter weight***

Two special-service, fractional-horsepower motors, for applications requiring moderately high starting torque, are rated at ½ and ¾-hp, 1725 rpm. They can be mounted in any position, are easily recon-



nectable at the terminal board for 115 or 230-v.

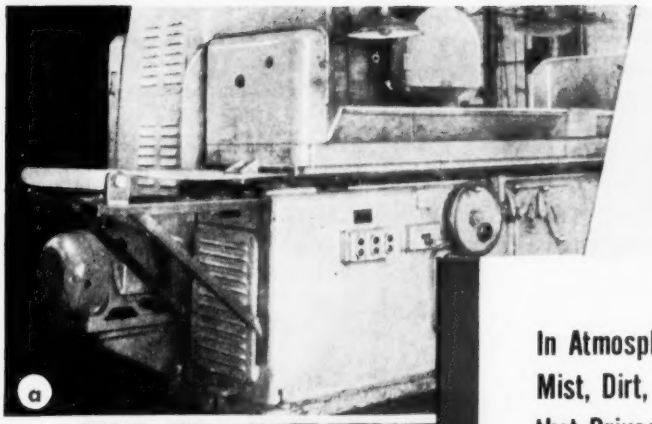
Manufacturer reports they are smaller and lighter in weight than their corresponding general-purpose ratings. General Electric Co., Dept. ST, Schenectady 5, N. Y.

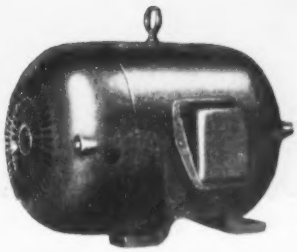
FOR MORE DATA—CIRCLE REPLY CARD NO. 17

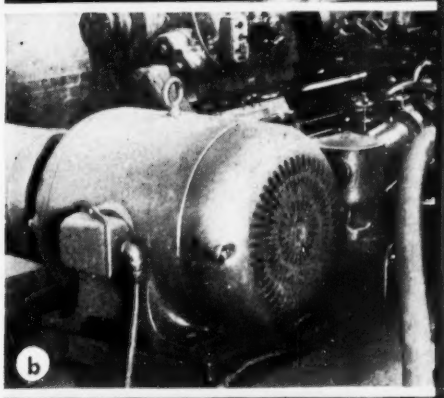
### Hose Fitting

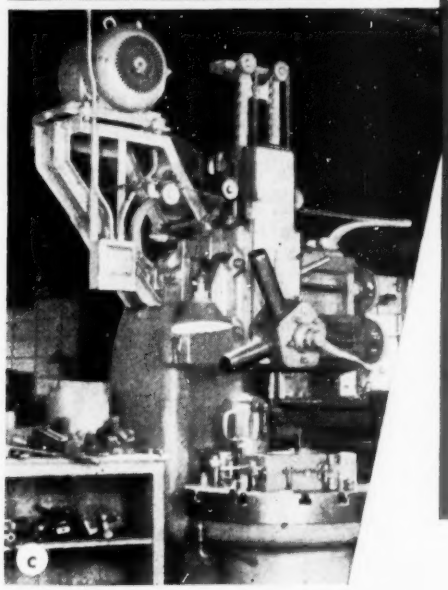
***. . . seals fluid inside hose***

Little Gem fitting is designed so that reinforcing braid of the hose alone is clamped while the fluid-tight seal is accomplished by sep-









## In Atmospheres Containing Dust, Mist, Dirt, Fog... Protect the Power that Drives Your Production Machines

... Use Century

# Totally Enclosed Fan Cooled Motors

In locations where the air is charged with substantial quantities of metallic or abrasive dusts, coolant mists or fog, or oil-laden factory dusts, Century Type TEFC Motors assure protection to help maintain uninterrupted production.

Because the vital parts of the motor are sealed in an inner frame, they are isolated from the outside atmosphere. A large fan blows cooling air between the inner and outer frames — keeps the motor temperature well within safe limits.

Wherever there are adverse atmospheric conditions, specify Century Totally Enclosed Fan Cooled motors, to give you the extra assurance that production will be maintained.

Other types and kinds of Century motors are built in sizes from ⅛ to 400 horsepower — designed to meet all popular industrial requirements.

**CENTURY ELECTRIC COMPANY**
**1806 Pine Street, St. Louis 3, Missouri**
*Offices and Stock Points in Principal Cities*

Century C MOTORS

(a) Surface grinder with Century 5 horsepower TEFC motor mounted near the floor.

(b) Century 15 horsepower TEFC motor operates in coolant fog from this grinder.

(c) Boring Mill with Century 5 horsepower TEFC motor.

**ALTERNATING CURRENT MOTORS**
**POLYPHASE**
Squirrel Cage Induction—⅓ to 400 H.P.
Wound Rotor Motors—1 to 400 H.P.
Synchronous Motors—20 to 150 H.P.

**SINGLE PHASE**
Split Phase Induction—⅛, ¼, ⅓ H.P.
Capacitor—⅛ to 20 H.P.
Repulsion Start, Brush Lifting, Induction—½ to 20 H.P.

**DIRECT CURRENT MOTORS**
⅛ to 300 H.P.

**GENERATORS**
AC, .03 to 250 KVA
DC, .75 to 200 KW

**GEAR MOTORS**
⅛ to 1½ H.P.

**MOTOR GENERATOR SETS**
AC to DC, AC to AC
DC to DC, DC to AC

Open Protected, Splash Proof, Totally Enclosed Fan Cooled, Explosion Proof.

CE-746

arating the inner tube from the braid and using it as a lip seal in an annular chamber. It is assembled without prior preparation of the hose end. Aeroquip Corp., Dept. ST, Jackson, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

## Carton and Drum Handler

***. . . no skids or pallets***

This combination carton and drum clamp handles both container types without skids or pallets. The clamp is adaptable to all the manufacturer's center-control sitdown fork trucks, both gas and electric powered. The device is designed primarily for loads with good dimensional stability and solid containers holding nonfragile material.

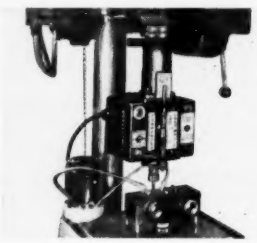
In addition to the clamping feature, a side-shifting attachment permits accurate location of clamp arms when picking up a load, or accurate load spotting in confined quarters. Both clamp and side shift are controlled hydraulically. Elwell-Parker Electric Co., Dept. ST, 4205 St. Clair Ave., Cleveland 3, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

## Automatic Tapping Attachment

***. . . fits any drill press***

This electrically-controlled, automatic lead screw tapping attachment has range of 0 to ¾-inch and fits any drill press. Called the Lead-Matic tapper, the unit is designed to handle all types of production tapping.



Simple electrical controls, located on the face, permit quick selection of proper tapping action. Precision ground lead screw is employed to pilot the tap into the work, producing accurate threads. Spring clutch drive mechanism provides automatic tap reversal to make drill press motor reversal unnecessary. Commander Mfg. Co., Dept. ST, 4225 W. Kinzie St., Chicago 24, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

## Redesigned Shop Welder

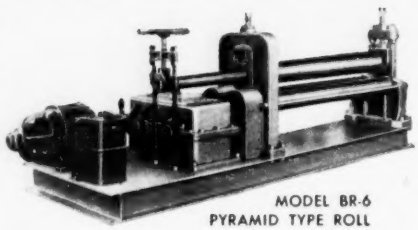
***. . . no mechanical ventilation***

Redesigned Sureweld shop welder line has four-coil transformer positioned horizontally to produce better ventilation and cooler operation. No mechanical ventilation is required. Double glass insulated magnet wire for primary and secondary windings improves insulation. Movable magnetic core section, which permits stepless current adjust-

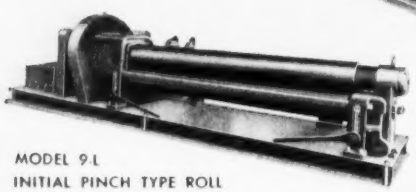

WEBB PLATE FABRICATING MACHINERY

PLATE BENDING ROLLS

The Webb Corporation offers a complete line of Plate Bending Rolls for the rolling of the thinnest plate up to plate 2½" thick. Offered in a variety of lengths and thicknesses. Constructed for the modern fabricating shop.



MODEL BR-6
PYRAMID TYPE ROLL



MODEL 9-L
INITIAL PINCH TYPE ROLL

Two types available: the Initial Pinch Type and Pyramid Type machines. All latest advantages of today's modern machine tools are incorporated, utilizing anti-friction bearings, totally enclosed gear drives. Special forming rolls for culvert pipe, stock tanks and other special shapes available.

SLIP ROLLS

A complete line of small Sheet Metal Forming Rolls are also available. All power-driven with shaft sizes 3" to 5" for the handling of the thinnest gauge material, up to 8 gauge material. Special rolls for the forming of polished sheets, aluminum and stainless steels can be furnished. Complete catalogues on any size machine furnished upon request; write Dept. D.

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UP TO 8 GAUGE PLATE

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PYRAMID TYPE ROLL

INITIAL TYPE ROLL

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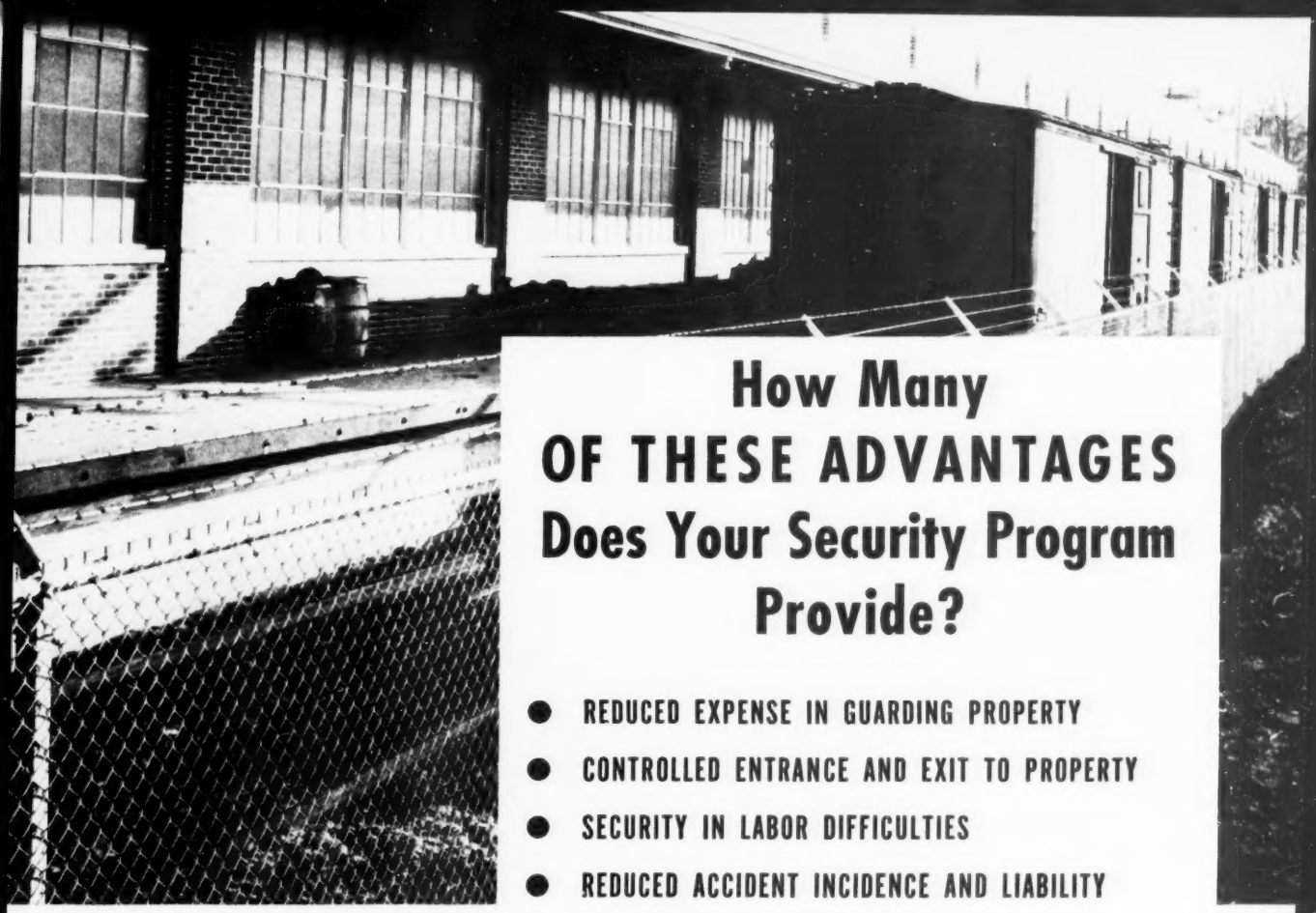

# How Many OF THESE ADVANTAGES Does Your Security Program Provide?

- REDUCED EXPENSE IN GUARDING PROPERTY
- CONTROLLED ENTRANCE AND EXIT TO PROPERTY
- SECURITY IN LABOR DIFFICULTIES
- REDUCED ACCIDENT INCIDENCE AND LIABILITY
- INCREASED OUTDOOR STORAGE SPACE
- REDUCED FIRE RISK, LOWER INSURANCE RATES
- BETTER APPEARANCE, HIGHER PROPERTY VALUE
- LASTING PROTECTION AGAINST THEFT, VANDALISM

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The importance of proper installation cannot be over-stressed. Erection of rust-resistant copper-steel Continental fence by our trained erection crews combines superior materials with experienced skill. This teamwork gives you a complete protection program . . . and added years of dependable fence security.

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When you select Continental Fence, you automatically add years to the life of your security program. You get "hot-dip" completely galvanized fence plus a higher tensile strength wire fabric. You get more post and top rail ties, and rugged framework embedded in solid concrete. You get stronger and more easily operated electrically welded gates and locking devices. You get all this and many more outstanding Continental fence features in all 10 Continental fence styles. See your nearest Continental Fence Representative, or write to Continental Steel Corp., Kokomo, Ind.

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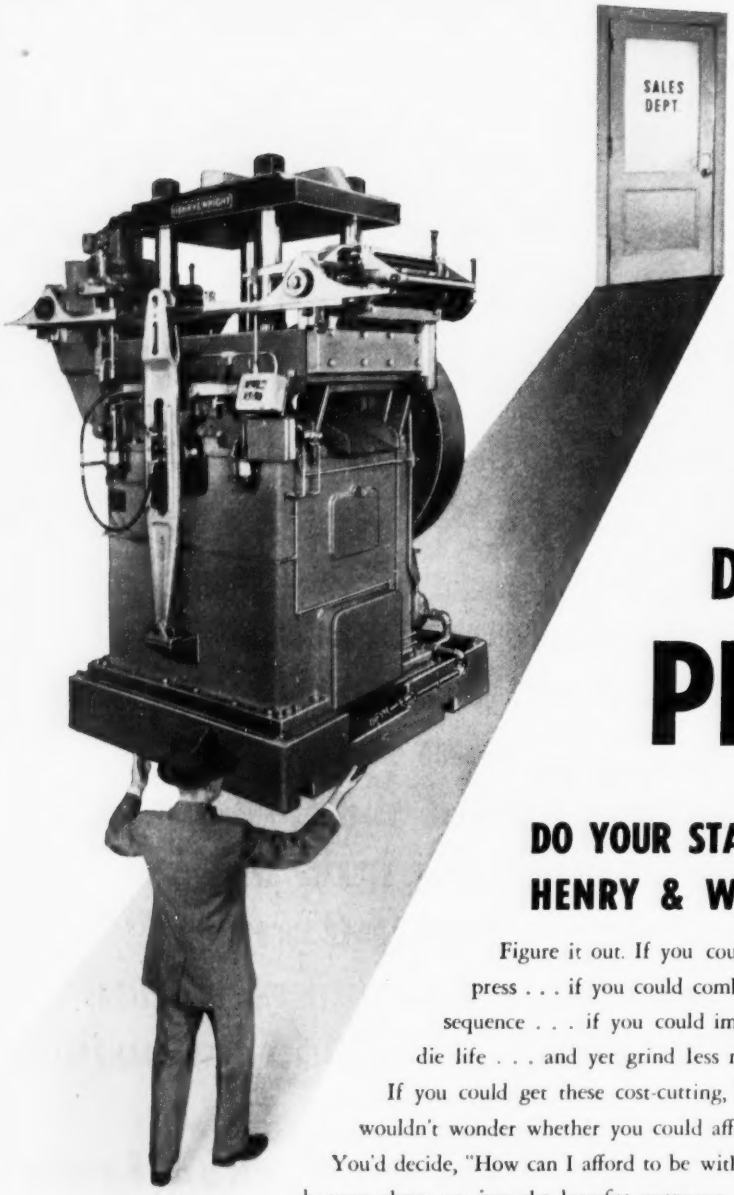


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Figure it out. If you could produce dozens of different jobs on one press . . . if you could combine separate operations into one progressive sequence . . . if you could improve accuracy, get higher speeds with longer die life . . . and yet grind less metal off the die to sharpen it . . .

If you could get these cost-cutting, labor-saving, inspection-reducing benefits, you wouldn't wonder whether you could afford a Henry & Wright Dieing Machine now. You'd decide, "How can I afford to be without it now?" Well, let's talk serious business, because those are just the benefits everyone gets with Henry & Wright Dieing Machines —and, brother, how the Sales Department will love that price cut you'll give them.

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## HENRY & WRIGHT

DIVISION OF EMHART MFG. CO.

**HARTFORD 1, CONNECTICUT**

NEW CATALOG Get up-to-the-minute facts on Dieing Machines — capacities range from 25 tons to 2500 tons. Write Henry & Wright, 441 Windsor St., Hartford, Conn.

ment, is positioned laterally to allow current control lever to be moved from top of case to front.

Calibrated current scale is increased in size to facilitate accu-

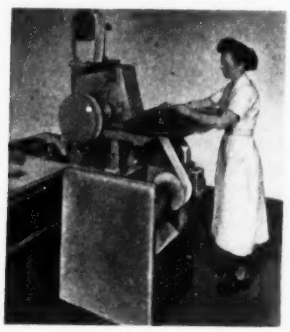
rate current settings. Two models are available: One with welding range of 25-295 amp, with and without power factor correction; the other with 20-180 amp range. National Cylinder Gas Co., Dept. ST, 840 N. Michigan Ave., Chicago 11, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

### Automatic Packaging Machine

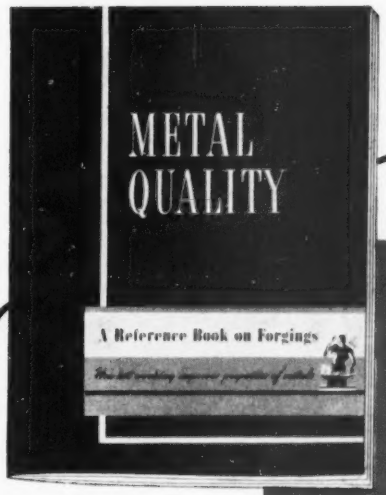
*. . . turns out 30-80 per minute*

This automatic packager will turn out 3, 4 or 6-inch square packages at 30 to 80 per minute, depending on nature of material packaged. The machine can incorporate a variety of small articles in the same



package. The machine expands the usual packaging function by printing identifying information on each package automatically, eliminating preprinting and labels in many instances.

Size changes can be made in about 15 minutes by two unskilled operators. To change sizes, it is necessary to remove only four pins


Engineering, production and economic advantages obtainable with forgings are presented in this Reference Book on forgings. Write for a copy.

**FORGINGS ARE UNUSUALLY EFFECTIVE FOR SOLVING PROBLEM PART PROBLEMS**

**A problem part problem, however complex, often ceases to be a problem once all the aspects of the part are checked with the unrivaled economic and mechanical advantages of closed die forgings and the closed die forging process for producing parts. Whatever the nature of problems that make a problem part, consult a forging engineer to determine the extent to which forgings can help you solve them.**

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J-02255




and replace a complete alternate size mechanism. Each size assembly is complete with rolls, thermostat and pretimed gear train. Packmasters, Dept. ST, 1056 Home Ave., Akron 10, O.

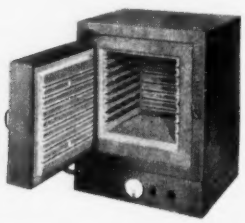
FOR MORE DATA—CIRCLE REPLY CARD NO. 22

### Electric Furnace Line

***. . . 2050 and 2300°F ranges***

Line of 37 electric furnaces is available in 2050 and 2300° F heat ranges. Each model is heated by the manufacturer's Dyna-Glow elements placed in special element holders.

Furnaces are available in front and top loading models. Elements



are guaranteed for one year's operation; are designed to avoid protrusion into the furnace interior. Replacement can be completed in several minutes by an unskilled worker using pliers and a screw driver. Automatic controls are available for all models. L & L Mfg. Co., Dept. ST, 804 Mulberry St., Upland, Chester, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 23

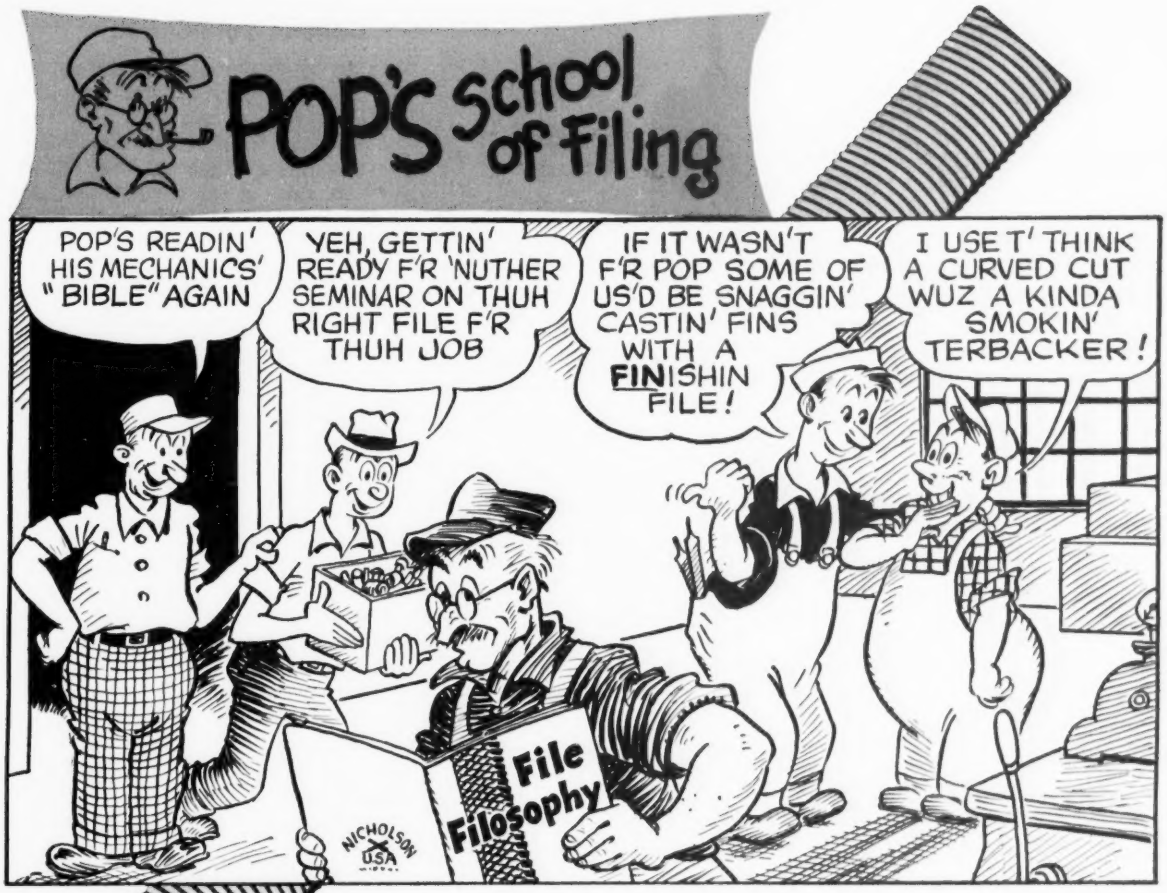
### Air Conversion Units

***. . . convert hand presses to air***

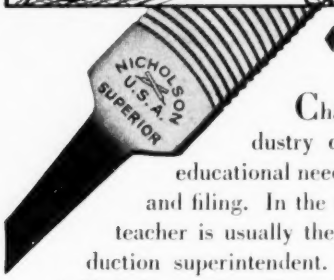
Hand-operated arbor press can become an air press in a few minutes by removing its present ram and replacing it with the air conversion unit designed for the particular make and model hand press. Ease of interchangeability permits the user advantages and flexibility of having both air and hand units. Tools and fixtures made to fit the hand press bed can be used with the air unit without any change.

Air units are available with cylinders having power factor of 12.5 or 19.6 times that of the air line pressure. Price Machine Products, Dept. St, 929 W. 80th St., Los Angeles 44, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 24


POP'S school of filing
POP'S READIN' HIS MECHANICS' "BIBLE" AGAIN
YEH, GETTIN' READY F'R 'NUTHER SEMINAR ON THUH RIGHT FILE F'R THUH JOB
IF IT WASN'T F'R POP SOME OF US'D BE SNAGGIN' CASTIN' FINS WITH A FINISHIN FILE!
I USE T' THINK A CURVED CUT WUZ A KINDA SMOKIN' TERBACKER!
File Filosophy
NICHOLSON U.S.A.

← *Nicholson Superior Milled Curved Tooth File (rigid tanged type) for flat surfaces*




Changing personnel in industry creates a never-ending educational need on the subject of files and filing. In the shop-school the logical teacher is usually the shop foreman or production superintendent. The logical textbook is Nicholson's "FILE FILOSOPHY." (And the logical files are Nicholson or Black Diamond!)

"File Filosophy" has become universally accepted as an authority and practical guide in the art of filing. From its *16th edition* we quote:

"Mechanical experts and technical students have used it as a foundation for articles in the machinist and industrial press, and for talks to the men in the workshops and classrooms. . . . The numerous editions of 'File Filosophy' have been due both to a heavy popular demand and to a diligent endeavor to keep it up to date — to cover changes in and additions to file designs; improvements in methods and operations; and new developments in materials and products. . . . With modern industrial and machine-shop production calling more and more for specialization in tools as well as in workers — *The right file for the job* has become increasingly important."

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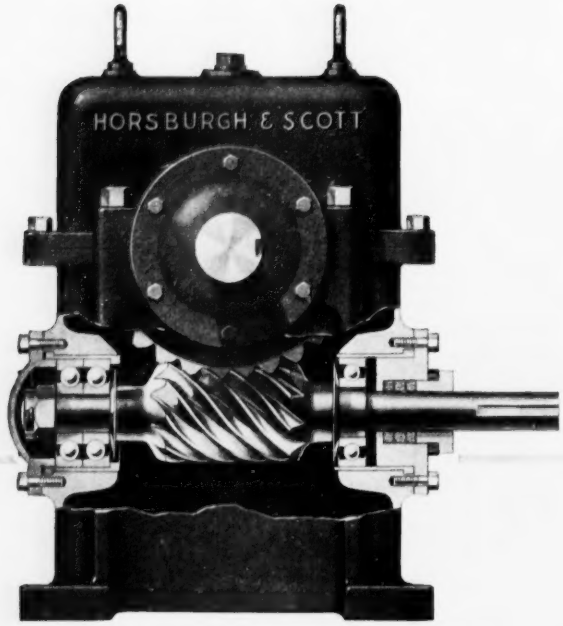


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Every modern element for reducing friction and other losses is incorporated in these reducers...hardened and accurately ground worm made from special case hardening steel, accurately made gear from chilled bronze to H & S specifications, anti-friction bearings, accurate alignment, smooth streamline interiors and proper lubrication. Due to its glass hardness, worm wear is nil...due to its accuracy, gear wear is negligible. Throughout their long life these reducers maintain their initial high efficiency.

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## Built-in Foundation

METHOD that permitted construction of a plant on dry wasteland sand with no support other than the sand itself saved International Minerals & Chemical Corp. $250,000. Cost of the entire plant: $12 million.

Key to the practice is a sand compactness process called Vibroflotation which Rust Engineering

VIBRATOR'S BUSINESS END
*. . . expends 10-ton force*

Co. is franchised to handle. International Minerals picked its plant site, at Bonnie, Fla., because of proximity to Bone Valley gravel, from which the company recovers phosphate.

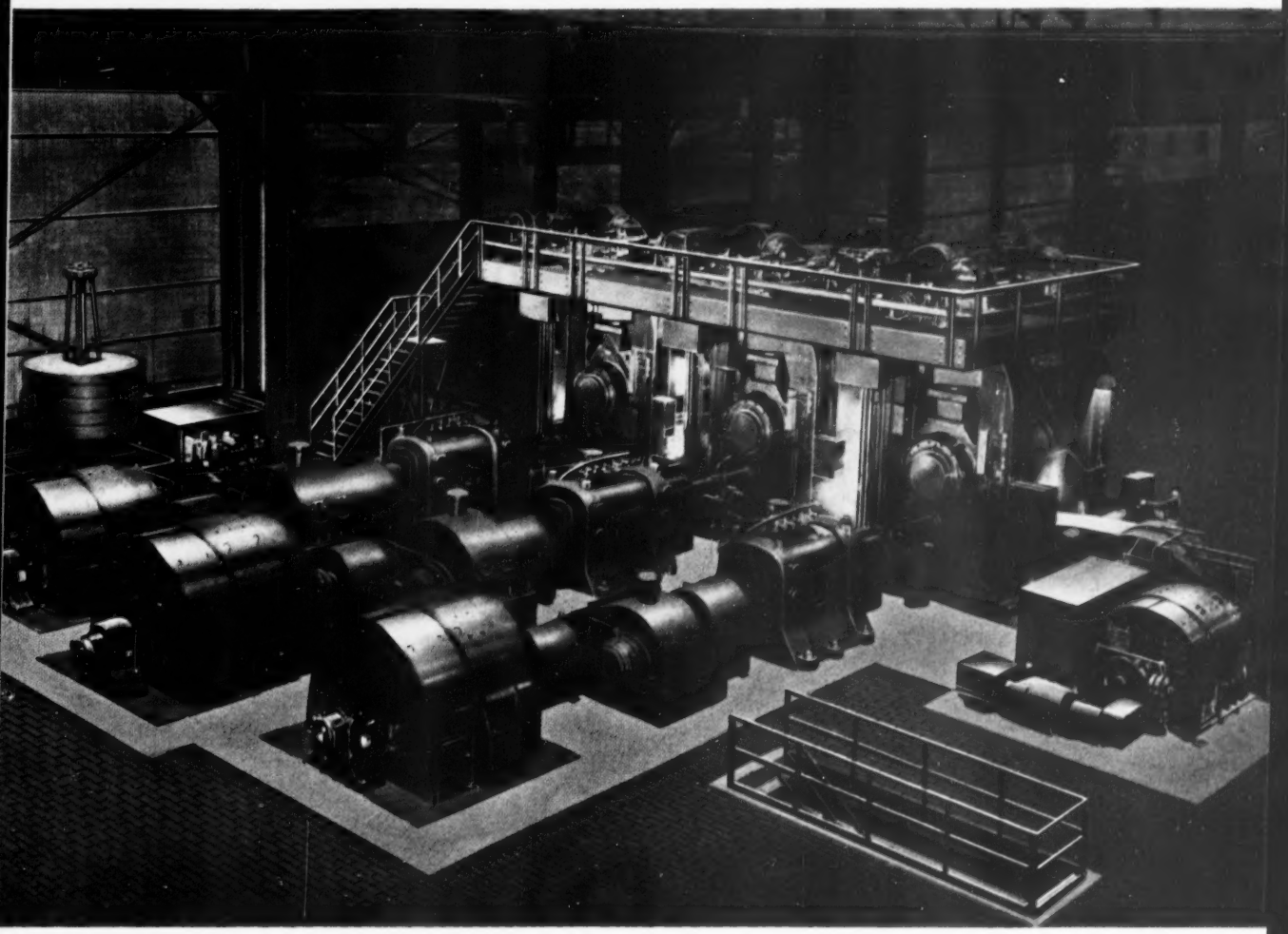
They faced a foundation problem because the uncertain base had to take shock and vibration without settling. The engineering firm suggested use of its compaction process, since piling would be substantially more expensive and might produce less stable support.

**Reducing Voids**—Principle of the practice involves increasing relative density of sandy soil through a shaking and pushing process that packs sand grains and reduces voids between the particles. Rust calls the device used to effect this change a Vibroflot. It consists of a tube vibrated by an electrically-driven eccentric, using 10-ton centrifugal force. The apparatus is attached to a follow-up pipe that houses water and electric lines.

Suspended from a crane and guided by vertical wooden leads, the mechanism is lowered into the

# CONTINENTAL

## 80-Inch TANDEM COLD STRIP MILL



## Complete Rolling Mill Installations

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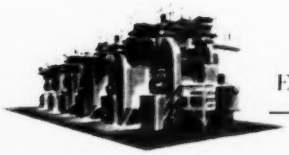
| UNIVERSAL MILLS | | STRUCTURAL MILLS |
| PLATE MILLS | ★ ★ ★ | RAIL MILLS |
| HOT STRIP MILLS | CONTINENTAL CHIPPER | BILLET MILLS |
| COLD STRIP MILLS | ROLL LATHES | ROD MILLS |
| TEMPER MILLS | SPECIAL MACHINERY | MERCHANT MILLS |

CASTINGS—carbon and alloy steel from 20 to 250,000 pounds

ROLLS—iron, alloy iron and steel rolls for all types of rolling mills

WELDMENTS—fabricated steel plate, or cast-weld design.



*Plants* at
East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.

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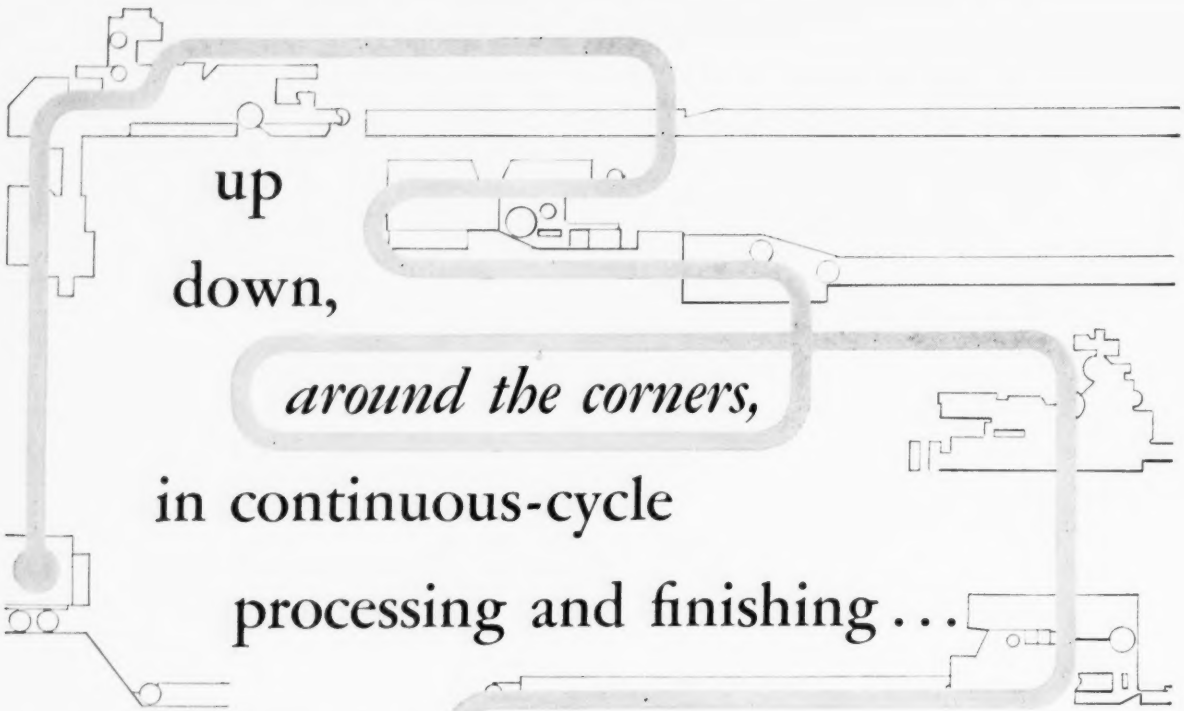
**CONTINENTAL**
Foundry & Machine
Company



# up down, *around the corners,* in continuous-cycle processing and finishing . . .

## the productive flames of GAS do it for LEWYT

Around the floors, and through the floors, the heat-processing and finishing operations at the Lewyt Corporation plant in Brooklyn are continuous and largely automatic.

Obviously, this kind of productioneering requires maximum use of that most flexible and versatile fuel —GAS.

Lewyt engineers use GAS as a precision tool. As a result, they maintain efficient material-labor productivity ratios and uniform high quality of the end products with favorable manufacturing costs.

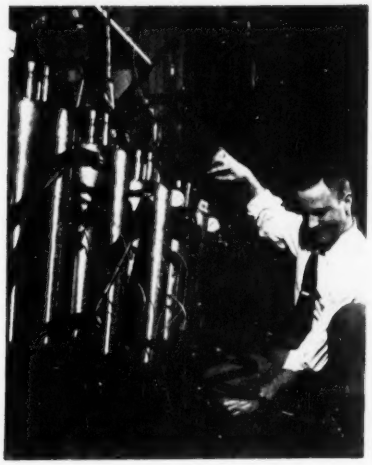
But this progressive builder of Lewyt Vacuum Cleaners, who also builds other mechanical and electronic equipment for the U. S. Government, is simply using GAS for what it is—a precision tool from pipelines, indispensable to continuous advancement in our technical economy.

Quite probably you can use the productive flames of GAS for more efficient productioneering. It will pay you to investigate it.

MORE AND MORE THE TREND IS TO GAS

**THE AMERICAN GAS ASSOCIATION**

*420 LEXINGTON AVE. • NEW YORK 17, N. Y.*



**Rectifier Power Test**

These steel columns are large rectifier tubes to be used in 10 all-electric locomotives for New York, New Haven & Hartford Railroad. On test at General Electric Co.'s Locomotive & Car Equipment Department, which is building the locomotives, the tubes with transformer will change 11,000-v ac into dc for the traction motors

sand while the vibrator at its tip forms a saturated sand mass, into which the vibrator sinks rapidly. Lowered to an average 13-foot depth, the device pounds surrounding sand into a tighter mass. Fresh sand is shoveled in from above to fill extra space emptied.

**Predetermined Pattern**—Result is a tightly compacted column about 10 feet in diameter. Columns are pounded in predetermined overlapping pattern with about 8 feet between centers, producing relative density of 70 to 100 per cent. Success of the project is attested by lack of any measureable settlement in the first structure completed, the phosphate storage building, six months after completion.

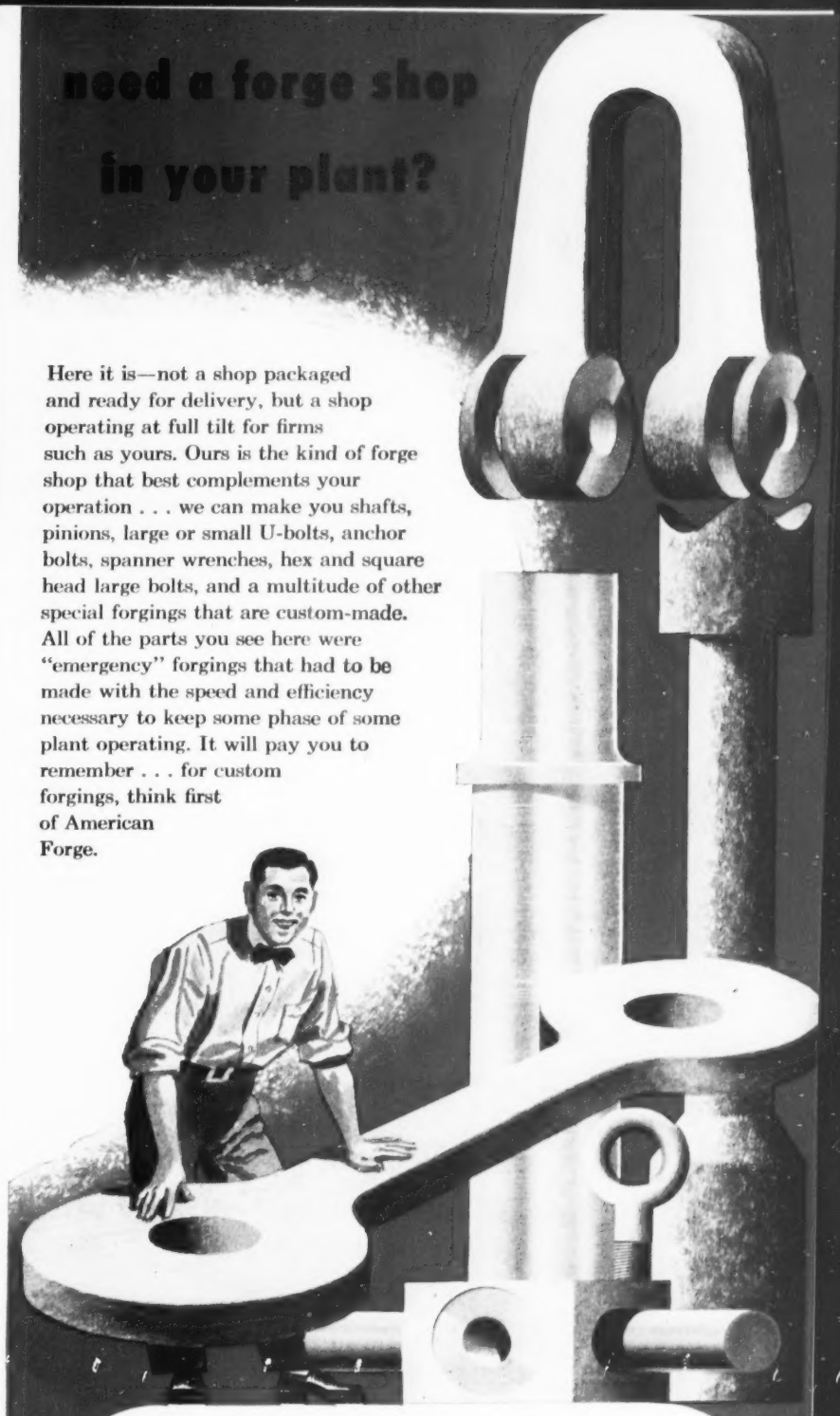
## Printed Circuits for Your TV

The printed circuit may now enter into your TV picture. RCA Victor Division of Radio Corp. of America will switch from a custom order basis in making these circuits for video to mass production.

Popular demand for TV sets has reached into the works for this special component. RCA Victor's Tube Department will apply quantity production techniques to its photo-etching process.


need a forge shop in your plant?

Here it is—not a shop packaged and ready for delivery, but a shop operating at full tilt for firms such as yours. Ours is the kind of forge shop that best complements your operation . . . we can make you shafts, pinions, large or small U-bolts, anchor bolts, spanner wrenches, hex and square head large bolts, and a multitude of other special forgings that are custom-made. All of the parts you see here were "emergency" forgings that had to be made with the speed and efficiency necessary to keep some phase of some plant operating. It will pay you to remember . . . for custom forgings, think first of American Forge.

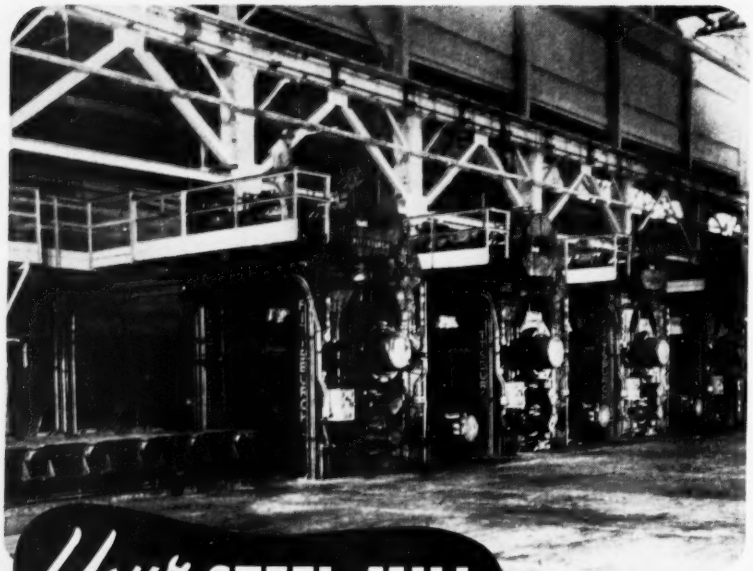


American Forge and Manufacturing Co.

818 Shore Avenue · Pittsburgh 12, Pa.

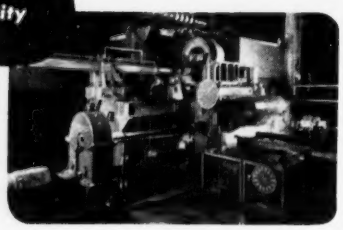
Forged shafts • pinions • gear blanks • steel rings • connecting rods • discs • heavy bolts up to 6" dia. • 5 to 100 ton capacity mill hooks • ratchets • load binders • hand and automatic tongs to your specifications

"Forgings for Industry since 1890"



*Your* STEEL MILL
FROM BLUE PRINT
TO OPERATION
. . . with UNDIVIDED responsibility

FOUR-HIGH STRIP MILL
DETROIT STEEL CORPORATION
PORTSMOUTH, OHIO
*Designers and Builders*
Pittsburgh Engineering and Machine Company



Newly developed Mandrel type up-coiler (eliminates under-floor installation)

Pittsburgh Engineering and Machine Company's years of experience in the design and building of heavy mill machinery and auxiliary equipment guarantees unexcelled performance and years of trouble-free operation.

*Write Today for Complete Information*

pittsburgh
ENGINEERING
& MACHINE CO.

319 Farmer's Bank Bldg., Pittsburgh 22, Pa. • Plant at Glassport, Pa.

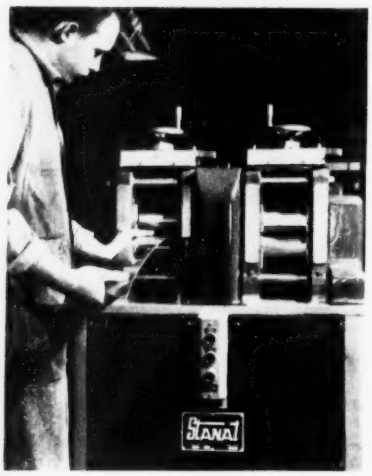
DIVISION OF PITTSBURGH STEEL FOUNDRY CORP.


## Small Mills, Heavy Jobs

**Flat or grooved rolls produce variety of shapes. Standard combinations give versatility**

NEW CONCEPT in design of small rolling mills is embodied in the line of 3 and 4-inch mills developed by Stanat Mfg. Co., Long Island City, N. Y. For what is believed the first time, mills of such dimensions now incorporate many features formerly associated only with the heaviest type of equipment.

Through use of standard, interchangeable parts, units can be tailored to meet individual requirements without resorting to complete redesign. Rolls are furnished




ROLLING FLAT STOCK
. . . *wide assembly variety possible*

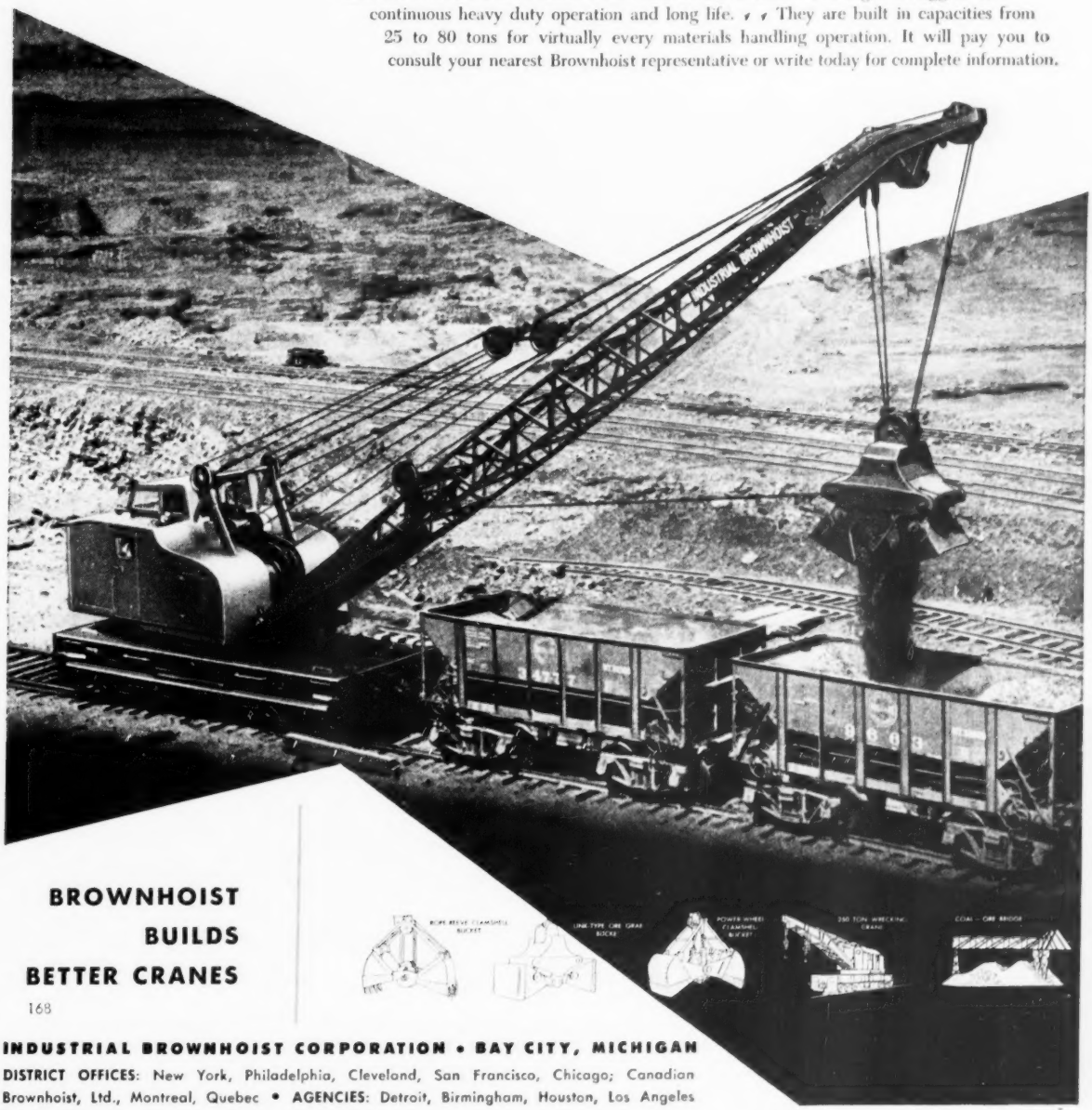
either flat or grooved to produce a great variety of shapes such as round, square, half-round, diamond or special shapes for individual requirements. Rolls are also supplied for reducing or compacting small tubing sizes and other similar purposes.

**Versatile Producer** — A typical grooved roll in the 3-inch diameter machine might produce square wire in sizes from 0.250-inch down to 0.040-inch, although this is by no means the practical limit. In the 4-inch diameter machine, this range of sizes can be materially increased. By mounting two 4-inch machines side by side on a single base, wire can be rolled from 0.750-inch down to 0.040-inch, but reduction ranges can be varied to suit individual

(Continued on p. 174)

# men who know cranes know you can depend on BROWNHOIST

Besides being a powerful, efficient unit for regular materials handling work, Brownhoist Cranes are unusually versatile. For example, on the great Mesabi Range where this Brownhoist Crane is loading ore, other Brownhoist Cranes are laying and ballasting track, rerailing cars and doing dozens of other tough production and service jobs. Brownhoist Cranes perform equally well as switch engines because they are built with a specially designed travel generator, motor and axle reduction unit for high tractive power and rapid acceleration. ✓ ✓ In railroads, steel mills and manufacturing plants, this versatility can save production time and money. So can other specially engineered Brownhoist features like the patented Monitor Type Cab and Clear Vision Boom, the Dynamatic Clutch and the Friction Clutch Boom Hoist. Brownhoist Cranes are strong and rugged for continuous heavy duty operation and long life. ✓ ✓ They are built in capacities from 25 to 80 tons for virtually every materials handling operation. It will pay you to consult your nearest Brownhoist representative or write today for complete information.



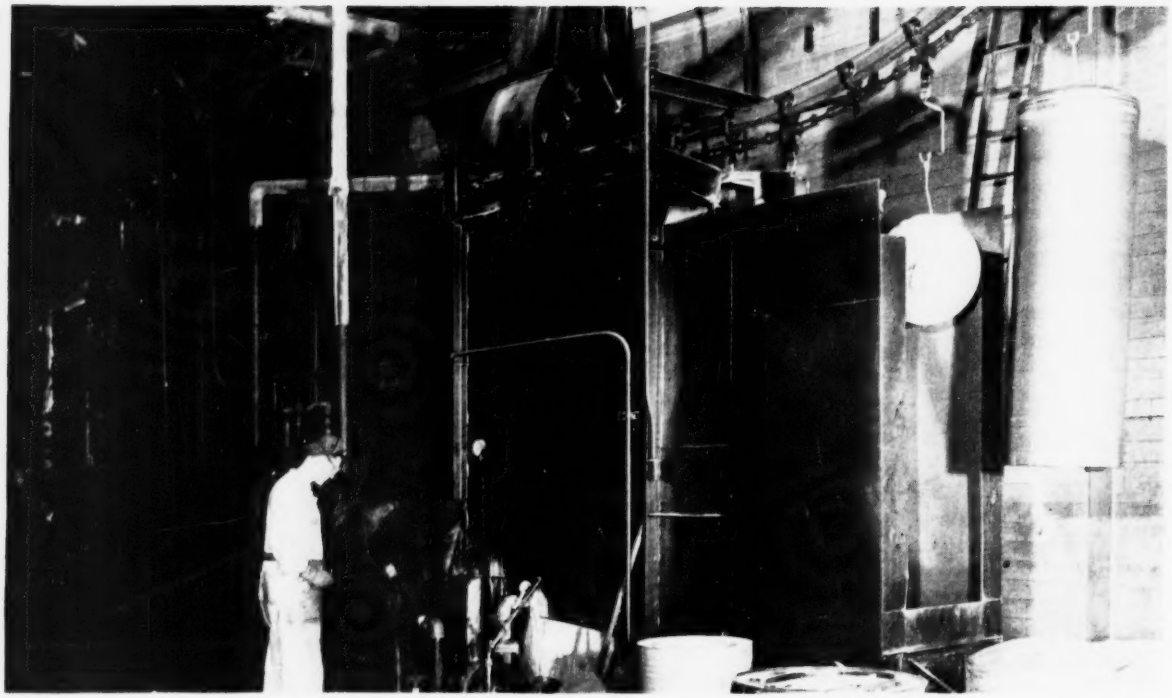

**BROWNHOIST BUILDS BETTER CRANES**

168



**INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN**

**DISTRICT OFFICES:** New York, Philadelphia, Cleveland, San Francisco, Chicago; Canadian Brownhoist, Ltd., Montreal, Quebec • **AGENCIES:** Detroit, Birmingham, Houston, Los Angeles



Work to be galvanized is hung on a conveyor after welding and then travels through a totally enclosed spray wash and pickling system prior to fluxing

# Galvanizing Can Be Automatic

PRIMARY difference between standard galvanizing methods and the one at Hotpoint Co.'s Milwaukee plant is that the Hotpoint system is entirely conveyorized.

All steps in the galvanizing operation are handled on a number 458 chain conveyor traveling at approximately 5 feet per minute. Work is hung on the conveyor in the fabrication area and is not removed until the entire process is completed. Only one employee is used to man the system, who also acts in the capacity of control man. A standby employee is used in the area on relief basis. He is used in another operation the balance of time.

**Starts Here**—Work consisting of water heater tanks and other parts is hung on the conveyor after welding and enters the galvanizing area where it travels through a totally enclosed spray wash and pickling system. Treatments consist of an alkali wash followed by a hot water rinse, then a hot sulphuric acid pickling spray which is followed by a clear cold neutralizer rinse.

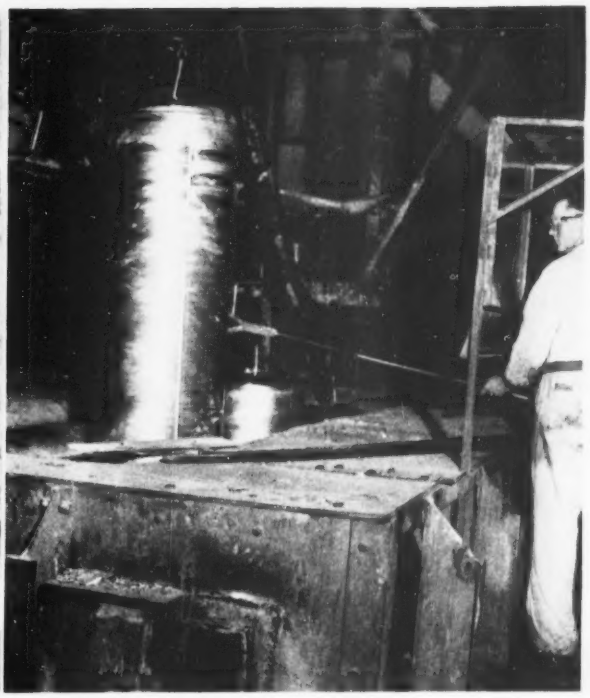
Emerging from the metal washing stage, parts enter by submerging method into a hot zinc ammonium chloride flux solution. On coming out of the flux dip, parts pass an automatically operated trip valve arrangement which blows off all excess flux from the surface. Work next enters a preheater oven at 250°F. This preheating oven dries flux on parts and also assists in relieving heat load of galvanizing kettle.

**Zinc Goes On**—Galvanized kettle is 16 feet long, 5 feet wide and 8½ feet deep. The conveyor makes a 180-degree turn in the kettle, thus bringing the work out of the kettle at the same end where it entered. (See flow diagram.) The work continues on same conveyor to the unloading station where it is removed by an operator for routing through the welders, to complete fabrication of the tank.

Drossing of the galvanizing tank is done periodically with an air hoist operated shovel. When it is necessary to transfer the zinc from one kettle to another, it is done by a pumping operation at the rate of approximately 100 tons per hour.

**Control Heat** — Quality standards of galvanizing are controlled by rigid operating temperature of the galvanizing kettle. Inasmuch as several different diameters and lengths of work are processed, tonnage entering the kettle varies with particular runs. The operator adjusts the temperature control instruments to suit the particular type of tank being coated at the time. Maximum tonnage of steel, with work spacing, through the kettle is 7600 pounds per hour.

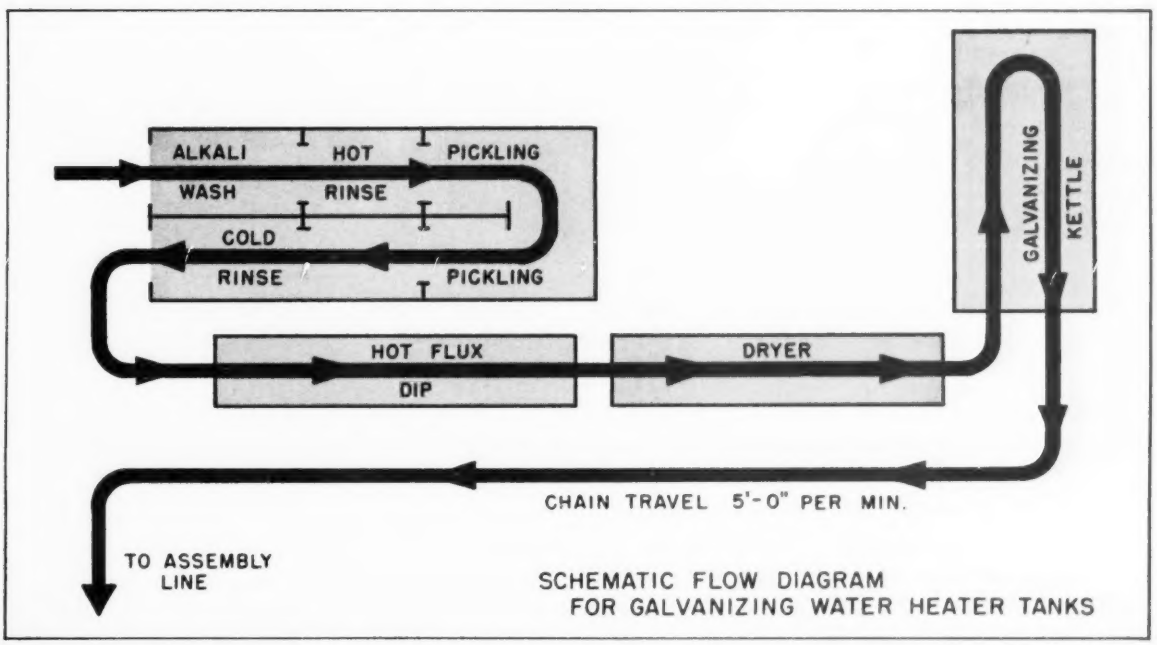
After cleaning operation, parts enter by submerging method into a hot zinc ammonium chloride solution. Automatic trip valve blows off the excess surface flux



Conveyor makes a 180-degree turn in the galvanizing kettle which brings it out at the same end where it entered. It then carries work to unloading station

**All steps in the hot dip galvanizing operation at Hotpoint's Milwaukee plant are handled on a chain conveyor traveling at 5 feet per minute and require one operator**

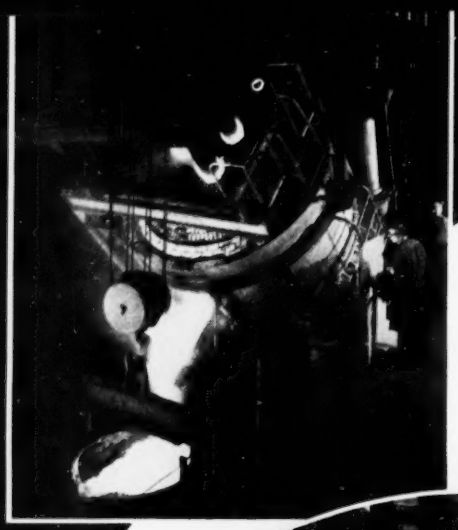
By LYLE BAKER
Hotpoint Co.
Milwaukee, Wisc.



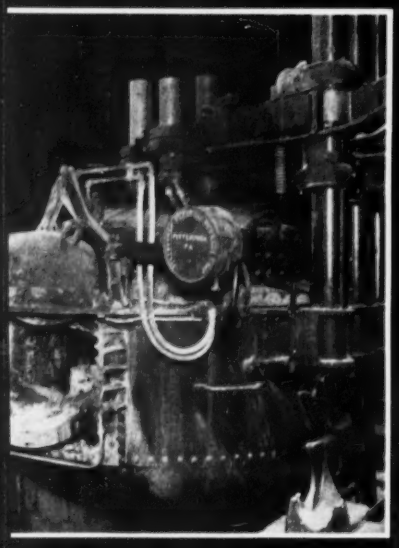

SCHEMATIC FLOW DIAGRAM
FOR GALVANIZING WATER HEATER TANKS

# HOW A

## standardizes hig

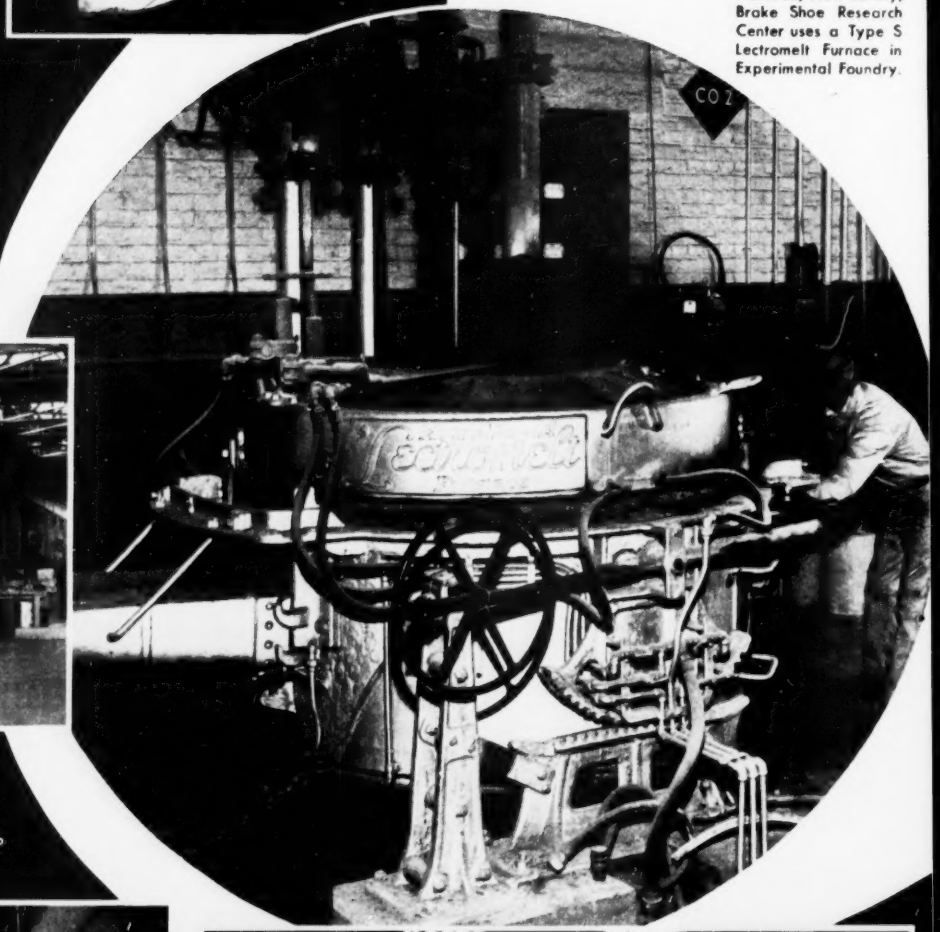


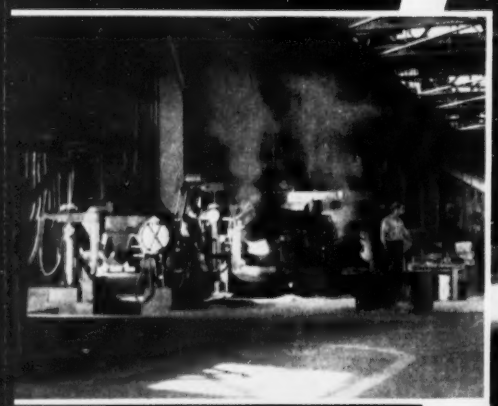
Two OPT Lectromelt Furnaces work constantly at AMSCO Division, Chicago Heights, Illinois.



At New Castle, Delaware, AMSCO Division, a Type Q Lectromelt Furnace.

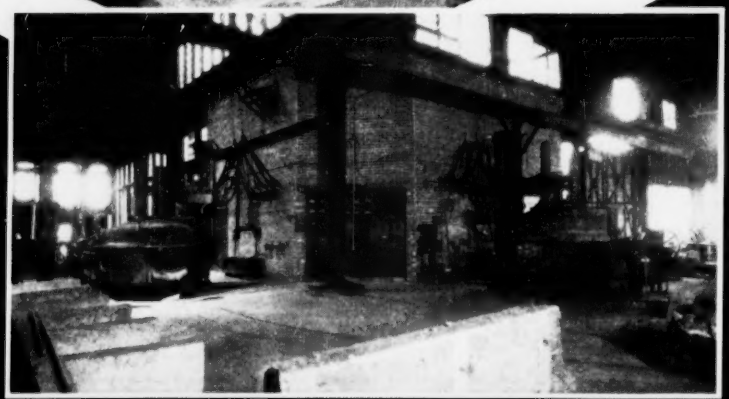
Mahwah, New Jersey, Brake Shoe Research Center uses a Type S Lectromelt Furnace in Experimental Foundry.



Electro-Alloys Division at Elyria, Ohio uses three Lectromelt Furnaces: Types QT, ST and TT.

The AMSCO plant at St. Louis uses two Type Q Lectromelt Furnaces.



There are three Type Q Lectromelt Furnaces in the Denver, Colorado, AMSCO Division.

# AMERICAN BRAKE SHOE

# high grade production

**Depend on Lectromelt* Furnaces for research and production**

American Brake Shoe tests and proves metal formulae and casting procedures in the Experimental Foundry at their Research Center at Mahwah, N. J. A new cupola, in combination with a two-ton Lectromelt Furnace, provides the close control required for research . . . plus the capacity to test accepted new procedures under actual conditions of production.

After establishing efficient methods for new procedures, they're relayed to the company's many divisions. And the high standards set in the Research Center at Mahwah become the production standards at the plants.

Indicative of the confidence American Brake Shoe places in Lectromelt Furnaces is the extensive use of them in various divisions, as indicated on these pages.

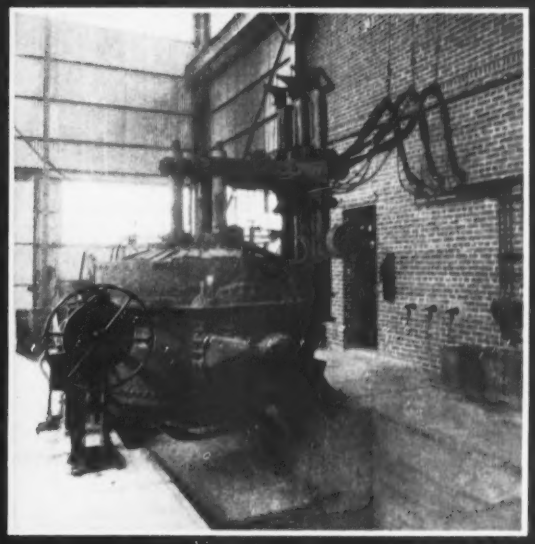
For Catalog No. 8, describing the advantages of Lectromelt Furnaces, write: Pittsburgh Lectromelt Furnace Corporation, 323 32nd Street, Pittsburgh 30, Pennsylvania.

*Reg. U. S. Pat. Off.

Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein Genoa. JAPAN: Daido Steel Co., Ltd., Nagoya

Even in Canada at Joliette, Quebec, it's Lectromelt, one Type Q and a CQT.

At Los Angeles, the AMSCO Division has three Lectromelt Furnaces: two Type Q's and an S.



WHEN YOU MELT... MOORE RAPID *Lectromelt*

(Continued from p. 168)

producer's requirements.

Greater versatility is achieved by mounting standard units in various combinations. Typical groupings: Two sets of flat rolls, one for roughing, one for finishing; one set of flat rolls and one set of wire rolls; two sets of wire rolls to increase range of the machine; two sets of flat rolls, one for hot rolling and one for cold rolling. Mills can also be furnished with a built-in bull-block to draw wire or to provide tension during rolling.

**Built Like Heavies** — Rugged construction of the compact machines is characteristic of heavy equipment design. These features include housings cast of Meehanite type GM alloy to withstand extreme stress and shockload. Heavy bronze bearings are completely enclosed within a heavy-duty welded steel cabinet-type base. In addition, 4-inch units are available with roller bearings and can be arranged for water cooling.

Precision adjustment built into these mills makes them capable of producing material to fine tolerances. Parallelism is maintained by special hardened and ground screws, which can be adjusted individually or by a single handwheel screwdown. A third type of adjustment, using a worm gear screwdown, is available for making fine adjustments while the machine is in operation. All units are equipped with large micrometer dials for easy reading.

## Management Talks June 17

Determining, planning and manning the future is the theme projected for American Management Association's general management conference next month. About 600 business executives are expected to attend sessions June 17-19 at Hotel Statler in New York. The association also holds its annual business meeting at the Statler June 18.

The climate in which business will operate in the months to come will be sketched by a government representative, a labor leader and a corporate officer. Other speakers will offer suggestions on how best to deal with economic conditions that business will face.

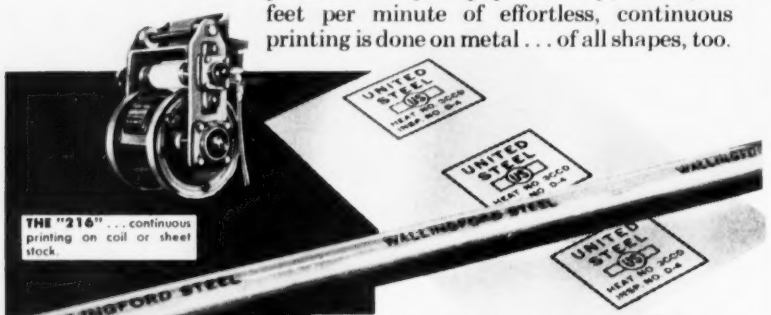
**Translating Trends** — A president, a top marketing executive and a financial officer, each from a different company, will describe how they are translating business trends into specific operating plans. Other sessions in the area of overall planning will offer a case study in developing a business forecast and translating it into a company program.

Top management's responsibility for developing trained and qualified executives to man the organization is another aspect of planning to be stressed at the conference. Participants also will hear the first report on a nationwide study covering the place of staff executives in industry and the significant advantages and problems involved.

**Other Topics**—Several other major topics the conference will consider include setting up product research and development; compensation methods used to attract and hold key executive personnel and insure maximum tax advantages; a description of public relations practices—both those that have and those that have not worked in past practice.

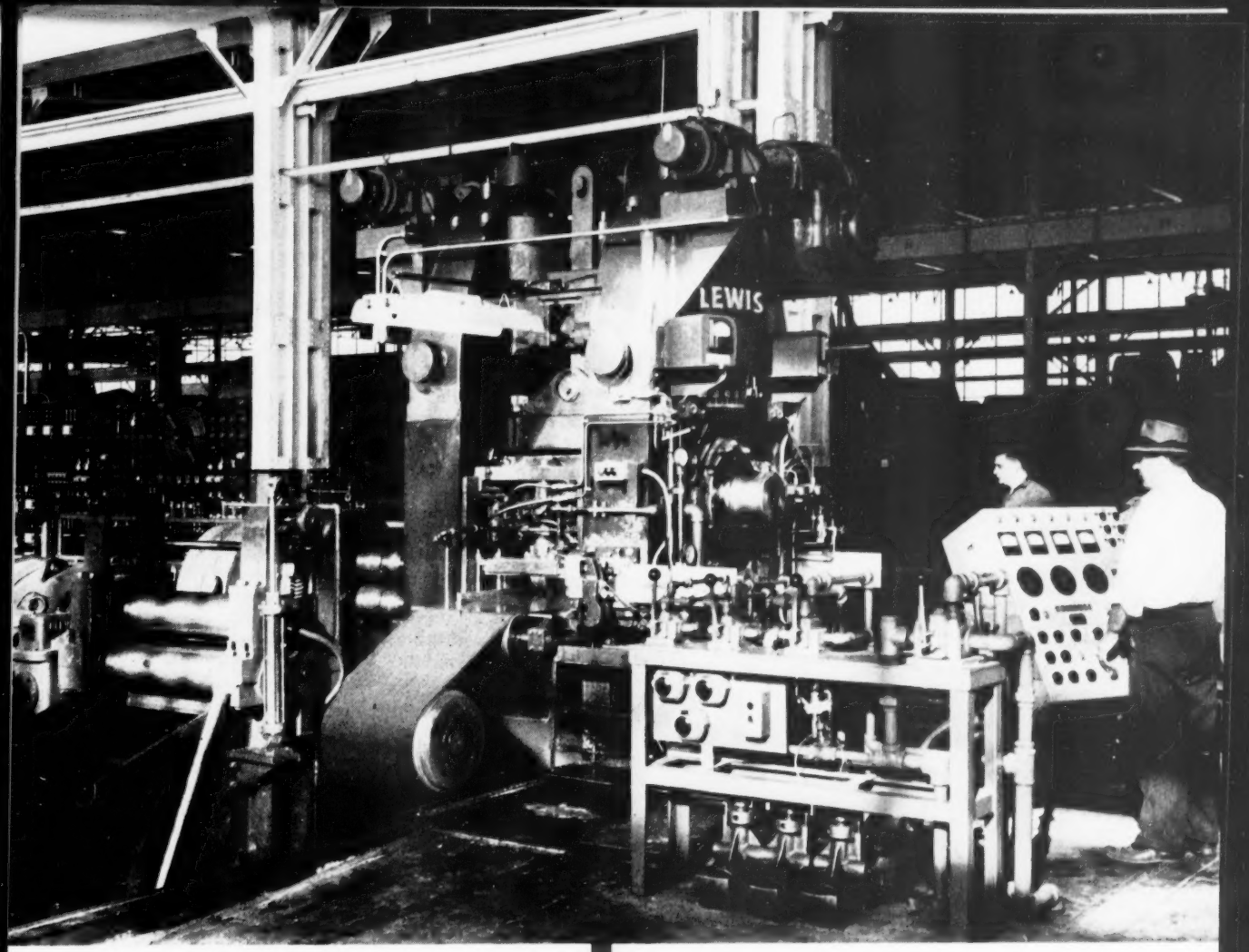
# What GUTENBERG didn't know!

When Johann Gutenberg made the first movable type, he didn't know to what amazing uses his invention would be put. He never realized, for example, that unless metal is printed with proper identification, many grades (all different), may look alike. He could print only a few laborious impressions a day on paper. Today, over 3,000 feet per minute of effortless, continuous printing is done on metal . . . of all shapes, too.



Miles of perfect marking—rolled on your products so simply and easily you'll quickly agree that continuous roller printing provides the fastest, most economical method for marking your product. Whether you need fixed conveyor line equipment, or light, easy-to-handle, portable equipment, it's available. There's even a unit for "two-color printing." Regardless of the unit selected, precise, uniform printing is assured. Write Matthews today for complete literature and information

**JAS. H. MATTHEWS & CO.**
**3978 FORBES ST. PITTSBURGH 13, PA.**
BOSTON CHICAGO CLIFTON, N. J. PHILADELPHIA




# *The New* LEWIS

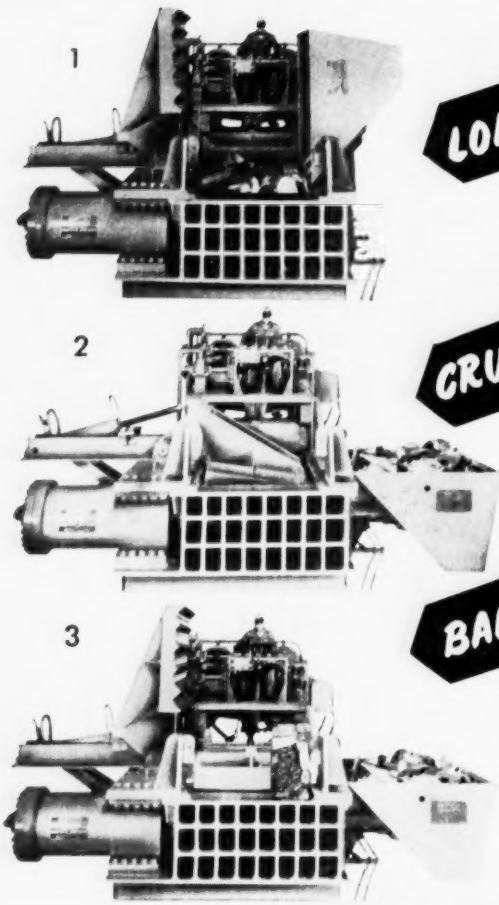
## 10" AND 26" X 28"

# FOUR-HIGH REVERSING COLD STRIP MILL

In this high-production mill Lewis has incorporated improvements which have increased both tonnage and accuracy of gauge. Equipped with antifriction bearings, pressure lubrication and the last word in "push-button" controls. If you plan to produce more and better strip write for complete details on this new Lewis product.

**BLAW-KNOX COMPANY**
LEWIS MACHINERY DIVISION
PITTSBURGH 22
PENNSYLVANIA

# BLAW-KNOX




## DEMPSTER-BALESTER GIVES YOU ALL 3 HYDRAULIC ACTIONS FOR FAST, CONSISTENT, MORE PROFITABLE SCRAP METAL BALING!

**The Dempster-Balester's "*Load It—Crush It—Bale It*" hydraulic action assures you of the fastest scrap metal baling operation . . . the closest approach yet to automatic baling!**

**It's a simple 1-2-3 continuous operation . . . Skip Pan Loader loads charging box. As Skip Pan returns to re-loading position, Auxiliary Compression Door compresses scrap with a 45-ton force. As Compression Door returns to up-right position, charging box closes . . . scrap is baled and ejected. Skip Pan has been re-filled and is ready to re-load charging box as soon as bale is ejected. As each cycle ends, another begins . . . *Load It—Crush It—Bale It—Load It—Crush It—Bale It* . . . one bale after another.**

**Without question, Dempster-Balesters are the fastest, most efficient presses baling scrap metal today! And you have six to choose from . . . three standard and three high speed models that turn out high density bales in capacities to meet any requirement from 1 to 9 tons per hour. Write to us today for complete information. A product of Dempster Brothers, Inc.**

*Shown below is a three-quarter view of the Dempster-Balester Model 600. All hydraulic assemblies are integral to the machine itself.*

# DEMPSTER BROTHERS

## 853 SHEA BUILDING, KNOXVILLE 17, TENNESSEE

## Plating Waste Treatment

**Purdue conference hears scarce material evaluation, new cyanide recovery process**

Treatment of electroplating rinse waters by ion exchange has been one of the most attractive methods considered in recent years for eliminating very serious water pollution problems.

Economic aspects for recovery of scarce metals and a discussion of a new process for the recovery of cyanide from cyanide plating rinse baths were explained recently in a paper delivered by C. F. Paulson, Permutit Company, New York, at Purdue University's industrial waste conference.

**Most Successful**—According to Mr. Paulson, the most successful of the ion exchange processes applied to electroplating waste recovery has been use of cation and anion exchangers in recovery of chromic acid. Additionally, the anion exchange process recently has been extended to treatment of mixed chromate rinse water. These processes are economically most attractive in plants where relatively few kinds of plating operations are performed and where these are performed on a large scale.

Mr. Paulson added that demineralization of all rinse water, accomplished through combined use of cation and anion exchangers, has been proven worthwhile on innumerable occasions. Generally, he said, it greatly decreases the amount of rejects, eliminates or reduces sharply the amount of handling and buffing to remove stains and water spots, improves corrosion resistance of finished work and, for many operations, improves appearance of work in process.

**New Method**—Mr. Paulson also described a new method utilizing demineralization, which he reported simplifies considerably the waste disposal problem associated with plating rinse waters. It also reduces investment, space and operating cost.

Citing strong points, he explained that this water treatment process has advantages of both batch and continuous waste treatment. Water treatment is continuous and waste treatment is batch. Like continu-

LEARN WHY... **SHENANGO**

**MEEHANITE METAL BAR STOCK**

**means superior quality parts!**

THERE are many reasons why Shenango tubular and solid bar stock is preferred for bearings, bushings, pump parts, liners, sleeves, gears, dies, gauges, and other common and special parts. Here are a few:

**FIRST,** centrifugally cast Shenango tubular bars assure more uniform pressure-dense grain, and complete freedom from blowholes, sand inclusions and other similar defects. They are better able to withstand friction, abrasion, and all kinds of stresses.

**SECONDLY,** both solid and tubular bars are made of superior, scientifically controlled Meehanite Metal. The metallurgical structure of Shenango Meehanite Metal is predetermined and controlled throughout the foundry operations, to produce the best quality bar stock available. What's more, machining speeds can be increased, and a smoother, finer finish is assured.

***Get all the facts***

**SEND FOR BULLETIN NO. 152**

**SHENANGO-PENN MOLD COMPANY**

Centrifugal Castings Division

**Dover, Ohio**

*Executive Offices: Pittsburgh, Pa.*

**SHENANGO**

ALL RED BRONZES · MANGANESE BRONZES · ALUMINUM BRONZES
MONEL METAL · NI-RESIST · MEEHANITE® METAL

# If YOU've got it to grind...

**CARBO**

TRADE

*"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, New York*

# WE've got it to grind with!

## You get UNBIASED COUNSEL based on all abrasive methods

**Your business,** in mass production of parts or finished assemblies, is the problem of generating close tolerance sizes, of producing high surface finishes, of removing stock. The business of CARBORUNDUM is the exclusive ability to recommend and furnish you the specific type of abrasive product which will give you highest quality at lowest cost, on every operation you perform.

**For instance, take portable grinding.** You can choose from at least 9 different methods of grinding with portable equipment. You're looking for the best, most economical method for your needs. How can you be *sure?* By asking CARBORUNDUM...for CARBORUNDUM alone has a complete, branded line of grinding wheels *and* abrasive belts *and* tumbling and polishing grains...and only CARBORUNDUM can recommend without bias, on the sole basis of what's best for you.

**Or perhaps you manufacture kitchen knives.** You might use grinding wheels or abrasive belts or *both* to grind the edges and bolsters...finish the handles...or sharpen the blades. You could use abrasive grain on set-up wheels, or abrasive belts, to finish and polish. CARBORUNDUM alone can give you *one-source control* of abrasive quality, on every type of abrasive you use...quality that's constant, identical, dependable—thus economical.

Several ways to do one operation? Call in CARBORUNDUM. Several processes on one part? Call in CARBORUNDUM. Either way, you win.

### Call your CARBORUNDUM *Salesman or Distributor* today!

He's your best bet for complete stocks, prompt delivery...and best of all, experienced counsel on *every* new development in the *entire* field of abrasives. He's in the yellow pages under "Abrasives" or "Grinding Wheels." Phone him today—it's to your profit!

Ready now—your free copy of the new big COATED ABRASIVE SELECTOR catalog... containing detailed recommendations for both machine and hand sanding operations on tough and soft metals, glass, plastic, wood. Phone for it today.

# RUNDUM

MARK

## ...the ONLY source for EVERY abrasive product you need

ous treatment processes, equipment required is relatively small and consequent space requirements and cost are small. As in the case with batch operation, there is little danger of automatic control equipment going haywire and producing an overtreated or undertreated waste.

### Swiss Automatics Enter U.S.

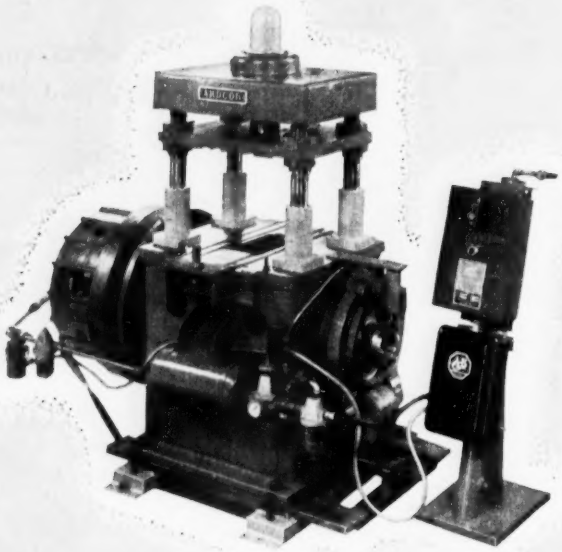
Modern Collet and Machine Co., Ecorse, Mich., reports they will produce Tarex single spindle automatic turret lathes in this country.

Two models will be built: The Tar 42 and Tar 64. The former handles bar stock up to 1⅝-inch with a 3-inch chucking capacity. The latter accommodates 3-inch bar stock and has a 6-inch chucking capacity. Both models are suited to both short and long-run production.

The machine has been built by Tarex Limited of Geneva, Switzerland. Replacement parts will also be available from stocks maintained by Modern Collet.


ARDCOR *Engineered*

**MEANS BETTER COLD-ROLL FORMING**



**35 TON PRESS EQUIPPED WITH AIR CLUTCH AND AIR RELEASE SPRING-SET BRAKE**

A complete package press that offers a high degree of dependability and accessibility. Available as either a "flying cutoff" or high speed dieing machine. Up to 700 strokes per minute. Write for details.

*American* **ROLLER DIE CORPORATION**

20700 St. Clair Avenue · Cleveland 17, Ohio


## Cheap Sand Is No Saving

**Not when it's for shell molding, Foundrymen hear. Often means higher resin costs**

CHEAP sand is not always an inexpensive shell molding sand, according to Dr. Manuel F. Drumm, Springfield, Mass., research group leader in Monsanto Chemical Co.'s plastics division.

Addressing the annual meeting of American Foundrymen's Society, Mr. Drumm agreed that cost and availability are important factors in selecting a sand for shell molding. He pointed out, however, that there are other less obvious considerations which can be equally important. Among them are particle distribution, grain shape and condition of the sand surface.

**Needs More Resin**—Mr. Drumm warned that use of cheap sand often makes extra large amounts of resin necessary to produce suitable shells. Since the resin content of each shell is more costly than its sand content, use of cheap sand in the long run may mean more costly shell production.

He also emphasized the importance of choosing the proper resin for each job, telling how his company has developed a variety of resin formulations to produce the most efficient resin-sand mixes.

**Cost-Saving** — Studies are now underway to find new ways of cutting down the amount of resin necessary to produce satisfactory shells. He said that in the future more efficient utilization of resin may be achieved by one or more of the following methods:

1. Thermal coating of sand with thermosetting binders.
2. Use of alcoholic solutions of conventional binders.
3. Use of liquid phenolic resins for sand coatings.

Mr. Drumm outlined several test procedures his company recommends for evaluating resin-sand mixes. Of these, he described flexural and tensile tests as most useful.

Once strength properties of a mix are verified by these two tests, additional testing for shell thickness, peeling, hot rigidity and packing on vertical surfaces should be

# JET BLACKS

Zinc plated typewriter key levers are a typical example of how the EBONOL * "Z" process provides an adherent, jet-black inorganic oxide finish to all types of zinc plated surfaces.

*Reg. Trade Mark

## For blackening metals use ENTHONE EBONOLS

**EBONOL "S"** Processes for blackening steel to produce jet-black oxide coatings. Simple and economical to operate. Operating temperatures: EBONOL "S", 285-290°F., EBONOL "S-30", 295-305°F.

**EBONOL "C"** The quality black for copper and brass that meets all military specifications. Produces cupric oxide finishes that are stable, adherent and protective.

**EBONOL "Z"** A durable, deep, rich finish for zinc plate or zinc alloy castings. Dull or glossy oxide black coatings are formed in from 5 to 10 minutes at 160-180°F.

U. S. PATENT NOS. 2,364,993, 2,460,896, 2,460,898, 2,481,854.

**Write to Enthone, Inc. for information and advice on any blackening process and ask for check list of Enthone literature on over sixty products and processes for better electroplating and metal finishing.**

METAL FINISHING PROCESSES

ENTHONE

ELECTROPLATING CHEMICALS

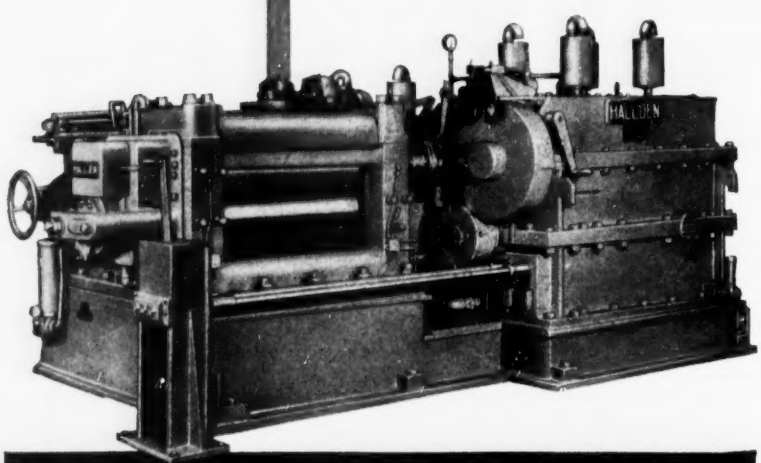
442 ELM STREET
NEW HAVEN, CONNECTICUT

HALLDEN
*Automatic Shears*

flexible design...
cutting accuracy...

continuous feed...
rugged construction...

CONSULT HALLDEN—
*the shearing specialists!*




THE HALLDEN MACHINE COMPANY
THOMASTON, CONNECTICUT

Sales Representatives
The Wean Engineering Co., Inc., Warren, O. T. E. Dodds, Pittsburgh, Pa.
W. H. A. Robertson & Co., Ltd., Bedford, England

**Production-Line Punching**

A dozen 4-ton punch presses stamp 1800 pieces each per hour in two 48-hour shifts a week at Baldwin Products Corp., San Gabriel, Calif. For its electronic component and automotive accessory line, the firm says the small Kenco presses permit what amounts to assembly line output by requiring relatively few die changes

made. If the mix successfully weathers these tests, Mr. Drumm says production on a limited scale can proceed with reasonable confidence.

## Automation on the Road

Automation has been put on wheels by the Westinghouse Electric Corp. As the theme of a display coach developed by Standard Control Division, it is being taken directly to design engineers, maintenance and supervisory personnel in the machinery manufacturing industry throughout the U.S.

A mobile combination of features of an auditorium and exhibit hall, the coach shows how common electrical devices such as linestarters, control stations, motors and circuit breakers can be used to achieve successful automation.

To make it as easy as possible for the customer's people to attend a showing, the company takes its coach to a plant and runs consecutive 1½-hour programs for groups of 10 to 12 engineers at a time.

# WIRE ROPE, too, resists attack with the RIGHT KIND of muscle

Brawny chest and shoulder muscles make the gorilla a formidable foe in the eternal warfare of the jungle. Defending himself and his family, this 450-pound heavyweight stands erect and fights back with sledge-hammer blows of his mighty forearms.

In wire rope, too, it takes the right kind of muscle to resist constant attack of abrasion, corrosion, bending fatigue, load strain and shock stress.

Complete quality control of Wickwire Rope means that you can always count on the right grade of steel and size of wire; the right construction and lay of the rope for best results on your particular job.

See your Wickwire Rope distributor or contact our nearest sales office.

WICKWIRE ROPE
A CF&I PRODUCT

1221

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION — Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa

THE CALIFORNIA WIRE CLOTH CORPORATION — Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane

WICKWIRE SPENCER STEEL DIVISION — Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

**WICKWIRE ROPE**

CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

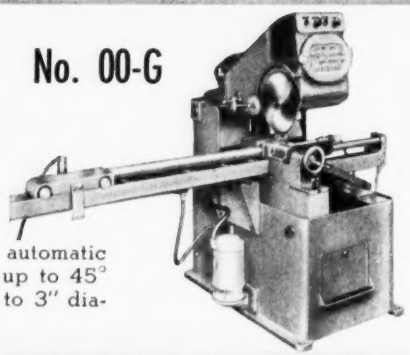
# . . . IT'S THE Cost per Cut THAT Counts

**Study these high production, low cost figures on three Motch & Merryweather Circular Sawing Machines**

**Make your own study of the cost per cut in your metal-sawing department. Then find out from Motch & Merryweather how much production at lower cost you can get on M. & M. Circular Sawing Machines, using our Triple-Chip blades.**

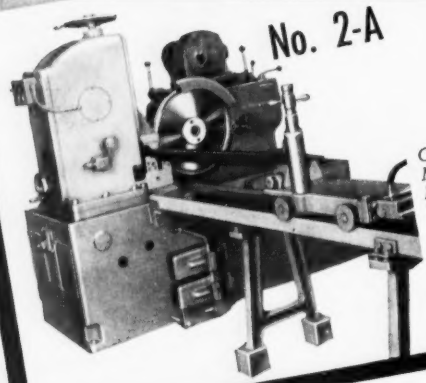
*Operation:* Steel door frames (mitre cut).
*Material:* Rolled steel shapes 6" wide x 1/16" thick.
*Production:* 200 pieces per hour.
*Tool cost per piece:* $.0002.

## No. 00-G



M. & M. No. 00-G Circular Sawing Machine. Manual or automatic stock feed. Readily adaptable to making cuts at angles up to 45° as well as high production square cut-off. Capacity: up to 3" diameter round; shapes—up to 3-3/8" x 6".

## No. 2-A



*Operation:* Rocket nozzle stock cut to length.
*Material:* S. A. E. 1020, 5" diameter.
*Production:* 60 pieces per hour.
*Tool cost per piece:* $.001.

The No. 2-A machine pictured at the left has automatic stock feed up to 72" cut-off lengths. It is offered also with manual stock feed. Capacity: up to 6-1/2" diameter round; structural shapes—up to 5" x 12".

## No. 4

*Operation:* Forging billets cut to length.
*Material:* S. A. E. 1045, 14" square.
*Production:* 6 pieces per hour.
*Tool cost per piece:* $.12.

No. 4. Widely used in steel and structural steel plants and forge plants sawing all types of forging, stainless and titanium alloys, die block steel, etc. Capacity: to 17" dia. round; structural shapes up to 24" I-beam.

***Complete size range, ferrous or non-ferrous, up to 43" diameter.***

***Manufactured by*** **—THE MOTCH & MERRYWEATHER MACHINERY CO.—**
**CLEVELAND 13, OHIO**

***Builders Also of Production Milling, Vertical Turning, Automatic and Special Machines***

Only M. & M. builds ALL 3: CIRCULAR SAW, SAW BLADE, BLADE GRINDER

**PRODUCTION-WITH-ACCURACY MACHINES AND EQUIPMENT**

## Breakage Down 50 per cent

**Single cleaning table takes a 750-pound bite per day out of previous casting loss**

INSTALLATION of a single Roto-blast table at the Woodruff & Edwards Inc. foundry in Elgin, Ill., is accomplishing a 50 per cent reduction in casting breakage. In addition, the firm reports cleaner castings, lower noise level and improved working conditions.

In actual production figures, this breakage reduction amounts to about a 750-pound improvement in each day's work. The usual run of work includes miscellaneous gray iron castings averaging about 10 pounds. Among recent jobs: Transmission housings, electric range tops, washing machine gear boxes, small machine tool parts, sprockets, fan bases and sump pump parts.

**Profitable Rate** — While breakage is down, production figures are heading in the opposite direction. With the old equipment, castings were processed at a rate of 1.32 tons per manhour. After the new table had operated 30 days, this rate had climbed to 1.52 tons; it rose twice more before leveling off: 2.68 tons during the second month and finally 3.47 in the third month.

The 9-foot table made by Pangborn Corp., Hagerstown, Md., has a 9-foot diameter revolving main table with six 36-inch auxiliary tables. These revolve on their own axes to bring all exposed surfaces into direct contact with the blast stream. The stream—hurled from a 45-degree angle with the work—and revolving action of the auxiliary tables make it possible to handle work with deep pockets, intricate contours and multisurfaces with top cleaning effectiveness.

**Bonus in Floor Space**—According to Woodruff & Edwards, the cleaning table installation has released 36 per cent of the floor area devoted to cleaning equipment. Formerly, barrels took up 256 sq ft; the table only fills 150 sq ft.

**Bonus in Time**—Same load that took about 3 hours before is fed through in a flat 12 minutes in the cleaning table.

RAILROAD RAIL LOCKS on railroad bridges are a serious problem to keep tight. Castellated nuts back off under the heavy vibration load of pounding wheels and shear the cotters. Here on the Fort Madison Bridge of the Santa Fe over the Mississippi is just one of the many places where Security Lock Nuts have solved this problem.

A Locknut that will hold under these conditions will hold anywhere. There is no other locknut like Security. They are self-locking in any position on the bolt and do not require bolt tension to keep them tight. They remain where you wrench them in the face of vibration that will destroy the bolt, yet they can be removed and replaced *any number of times* without materially reducing their locking power. This means easy installation—nothing to line up—no extra parts—nothing to shear—and it means easy maintenance. Authoritative tests have proved conclusively the gripping power of Security Locknuts.

We would like to have you see the reports on these tests. Security Locknuts are made in 3/8" to 3" bolt sizes.

*Ask for more details.*

**WHAT IS YOUR TOUGHEST FASTENER PROBLEM?**

That is the one we want to help you on. Security fastener experts have a long range of experience in problems where other fasteners would not hold. Challenge us to make it stick!

**ARE YOU COTTER CONSCIOUS?**

There may be places where cotters are the only solution but cotters are expensive to install. Security Locknuts eliminate the adjustment of expensive castellated nuts, chilling and weakening bolts and setting cotters. You install Security just like an ordinary nut.

**WHY DESTROY THE BOLT**

Battered up bolt ends mean tough maintenance for your customer. Why peen bolt ends when you can lock the part in place in half the time and still permit easy removal.

**ONE NUT DOES IT!**

With Security it takes only one nut to hold the job. Just put it on like an ordinary nut. The Security retainer holds it in place and the nut body takes the load. Ask for more complete details. Let us tell you how it's made.

**THE SECURITY LOCKNUT**

The photo diagram, left, shows a cross section of the Security Locknut. The Locking insert grips the bolt with the terrific tension that only the best of spring steels could exert. Simple, dependable, positive.

**THE SECURITY CAPLOC**

The Security Caploc—a cap nut that locks—costs less in most cases than an acorn nut, stays tight and protects bolt ends from corrosion.

*SECURITY LOCKNUT CORPORATION*
1504 North Ave., Melrose Park, Ill.

Please send me without obligation:

☐ One of your Thread Tolerance Charts.

☐ We have a fastener problem and would like to know more about Security Locknuts.

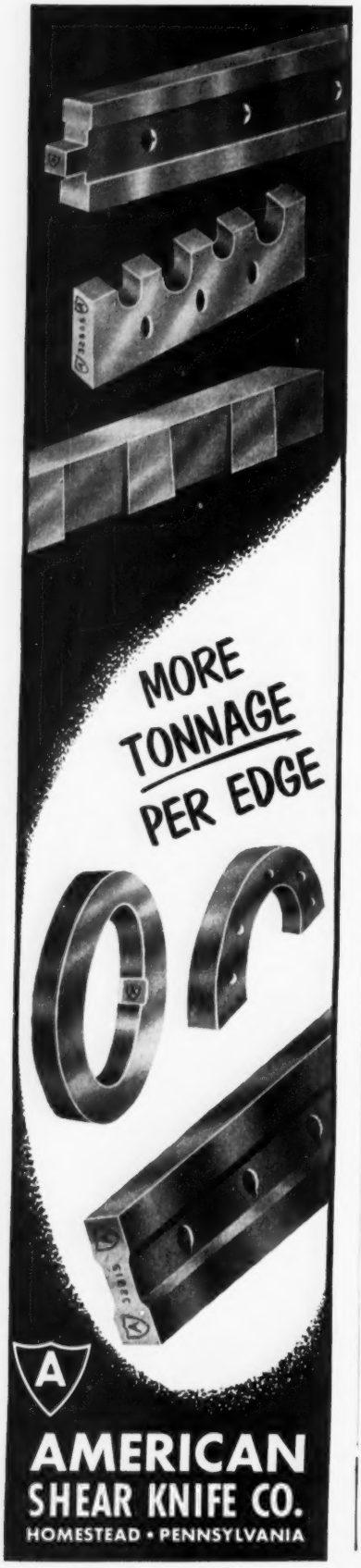
Company Name .....

Address .....

Town ..... Zone ..... State .....

Signed .....

*Security*
The Nut You Can't Shake Loose



IT PAYS THIS DRIVER TO BE CAREFUL ON THE JOB
*. . . rough handling and damage mean layoffs*

## Hot Competition Brightens Truck Safety Record

A UNIQUE fork truck driver competition spells increased safety for truck operators at American Finishing Co., Memphis, Tenn. It is responsible for decreased operating costs and equipment maintenance charges.

Each truck is assigned to a certain driver. If he is caught handling his equipment in a rough manner, or damaging material, he is warned. The second offense means a one-day layoff. The third offense demands a one-week layoff. The fourth offense automatically calls for discharge. The second or third could conceivably call for discharge, if the extent of damage or employee's attitude warranted it.

**Selected Drivers**—When the company receives a new truck, selection of the driver is contingent upon his safety record and his cost record of truck operation. In assigning new equipment to the driver, the company points out these reasons for his selection.

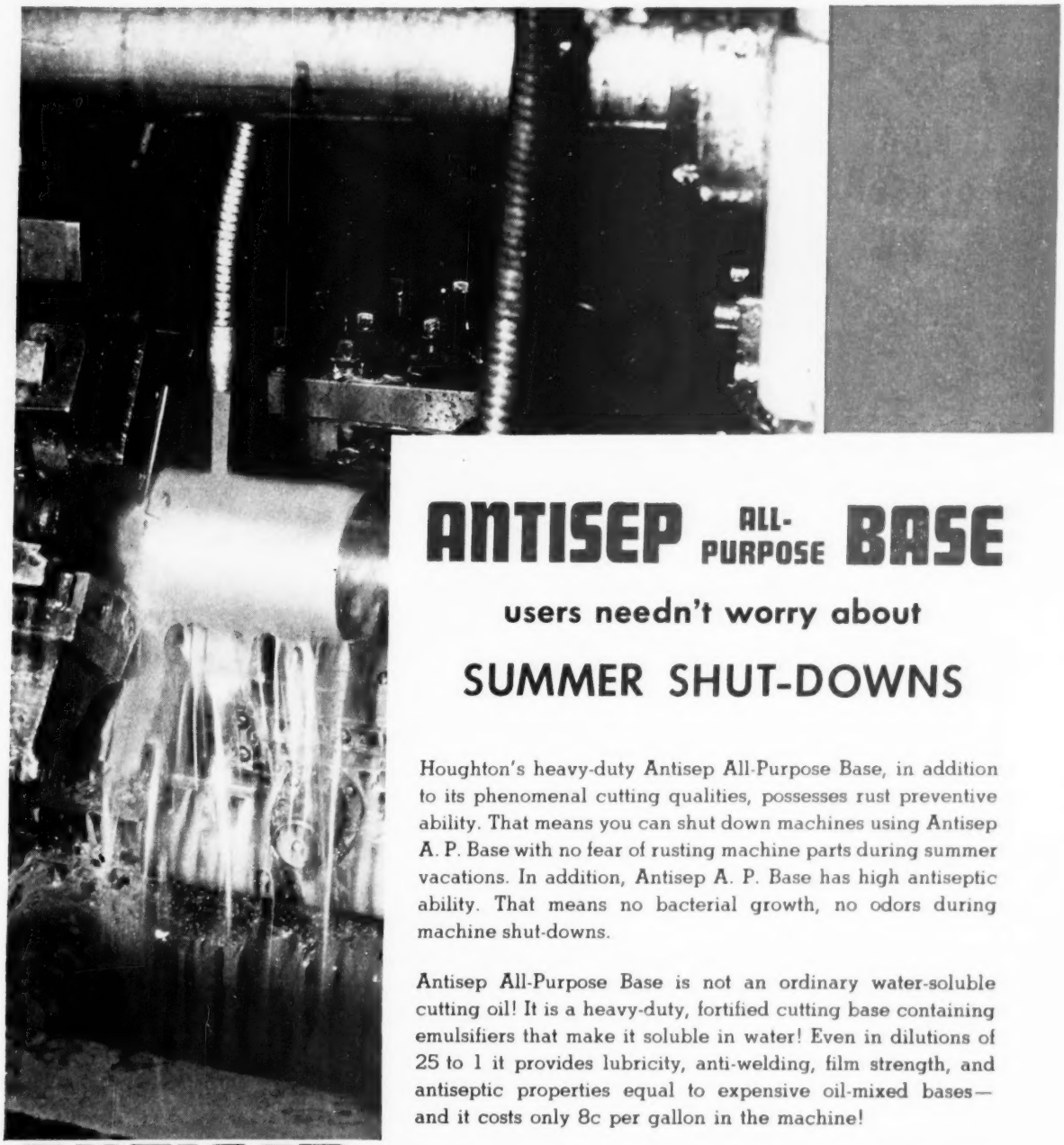
Proof of the operation's success: Competition is so keen for a truck job, that it takes five years to become eligible. Operators are enthusiastic about the competition; the company finds costs have tumbled.

**For Example**—Cost of operating a single truck for an entire year, including amortized cost of the truck, is only $1358.94. In addition, it must be realized that this equipment runs in some departments during three 8-hour shifts, bringing down average cost to $452.98 for one year for one 8-hour shift per day.

At American Finishing, trucks have compiled an amazing record for more efficient handling. For example, carloading time was slashed from 28 to 1.3 manhours; workers formerly used for this backbreaking task have been freed for more productive jobs. Trucks also increased use of storage space 250 per cent; a truck stores 54 palletized rolls in space previously occupied by 15.

### Naval Use for Nylon

Preliminary tests by the Navy show nylon has superior erosion and corrosion resistance when used as trim material in sea-water-line valves of both globe and gate types. A nylon insert in the disc of a 4¼-inch globe valve used in high-velocity sea water was found to be in excellent condition after service of 18 months.



# ANTISEP ALL-PURPOSE BASE

## users needn't worry about

## SUMMER SHUT-DOWNS

Houghton's heavy-duty Antisep All-Purpose Base, in addition to its phenomenal cutting qualities, possesses rust preventive ability. That means you can shut down machines using Antisep A. P. Base with no fear of rusting machine parts during summer vacations. In addition, Antisep A. P. Base has high antiseptic ability. That means no bacterial growth, no odors during machine shut-downs.

Antisep All-Purpose Base is not an ordinary water-soluble cutting oil! It is a heavy-duty, fortified cutting base containing emulsifiers that make it soluble in water! Even in dilutions of 25 to 1 it provides lubricity, anti-welding, film strength, and antiseptic properties equal to expensive oil-mixed bases—and it costs only 8c per gallon in the machine!

Ask the Houghton Man to run an Antisep A. P. Base production-run test in your machines. You'll get better production, closer tolerances, finer finishes, and complete safety for your machinery.

**ANTISEP**

**ALL-PURPOSE BASE**

—not a mere water soluble oil, but a fortified concentrate scientifically developed to give you "100 oils in one!"

**E. F. HOUGHTON & CO.**

PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

*Ready to give you on-the-job service . . .*

# Six MORE REASONS WHY

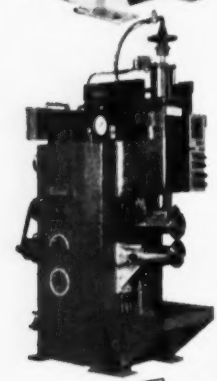
Federal

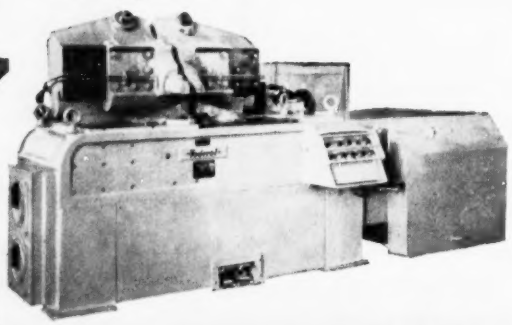
## STAYS "FIRST IN RESISTANCE WELDING"

From standard spot welders to special machines FEDERAL has the resistance welder tailored to cut your production costs.

The most complete line in the industry also offers you the plus features of sturdy design, highest quality workmanship and attention to details; such as, maintenance accessibility, which make FEDERAL FIRST IN RESISTANCE WELDING.

Let us work with you on your resistance welding applications, so that you can benefit from our engineering and production background. Remember, our experience pays you dividends in lower equipment costs and faster solution of your welding problem.





Federal WELDERS

Warco PRESSES

THE FEDERAL MACHINE & WELDER COMPANY

WARREN, OHIO


## Extra Eyes Monitor Strip

**TV camera, monitor and receiver provide constant check on 80-inch hot strip mill**

TELEVISION becomes a production asset at U. S. Steel Corp.'s Gary sheet and tin mill where a camera, monitor and receiver are installed on the 80-inch hot strip mill.

The TV installations, made by Illinois Bell Telephone Co., enable the mill operator to watch and check the condition of the steel strip as it leaves the last finishing stand and speeds a distance of 395 feet to the coilers. The extra eyes help the operator spot potential trouble and take corrective action before strip is coiled and the damage is done.

**Overall View** — The camera is mounted 48 feet above the runout

POTENTIAL TROUBLE SPOTTER
*. . . 395 feet at a glance*

table leading to the coilers. It commands an over-all view of the strip from finishing stand to coiler. A monitor with 10-inch screen is mounted on the north wall of the mill opposite No. 1 coiler and is used only when it is necessary to make adjustments.

The TV set, comparable to the home type, is mounted on the control pulpit adjacent to No. 10 finishing stand. Operator can ignore a series of water-sprays which obscures his view of the steel strip and concentrate on his receiver. On his 10-inch screen of 525 horizontal

THE BURLINGTON LIARS' CLUB
SPINS A YARN FOR BAKER'S MAGDOLITE

# WINNER BY A DRAW!

Two-Gun Smith, a fellow who lived down in Texas, was the fastest man on the draw that ever lived. One day he walked into one of those high-toned saloons in El Paso, where they had a full-length mirror hanging at the end of the bar. When Two-Gun saw himself in the glass, he figured such an ornery looking cuss might be looking for trouble, so he eased his hands a mite toward his shootin' irons. Naturally, the hard looking hombre in the mirror did the same. That was enough for Two-Gun. He shucked his hawg laigs and started shootin'—and he was so fast that he beat himself to the draw!

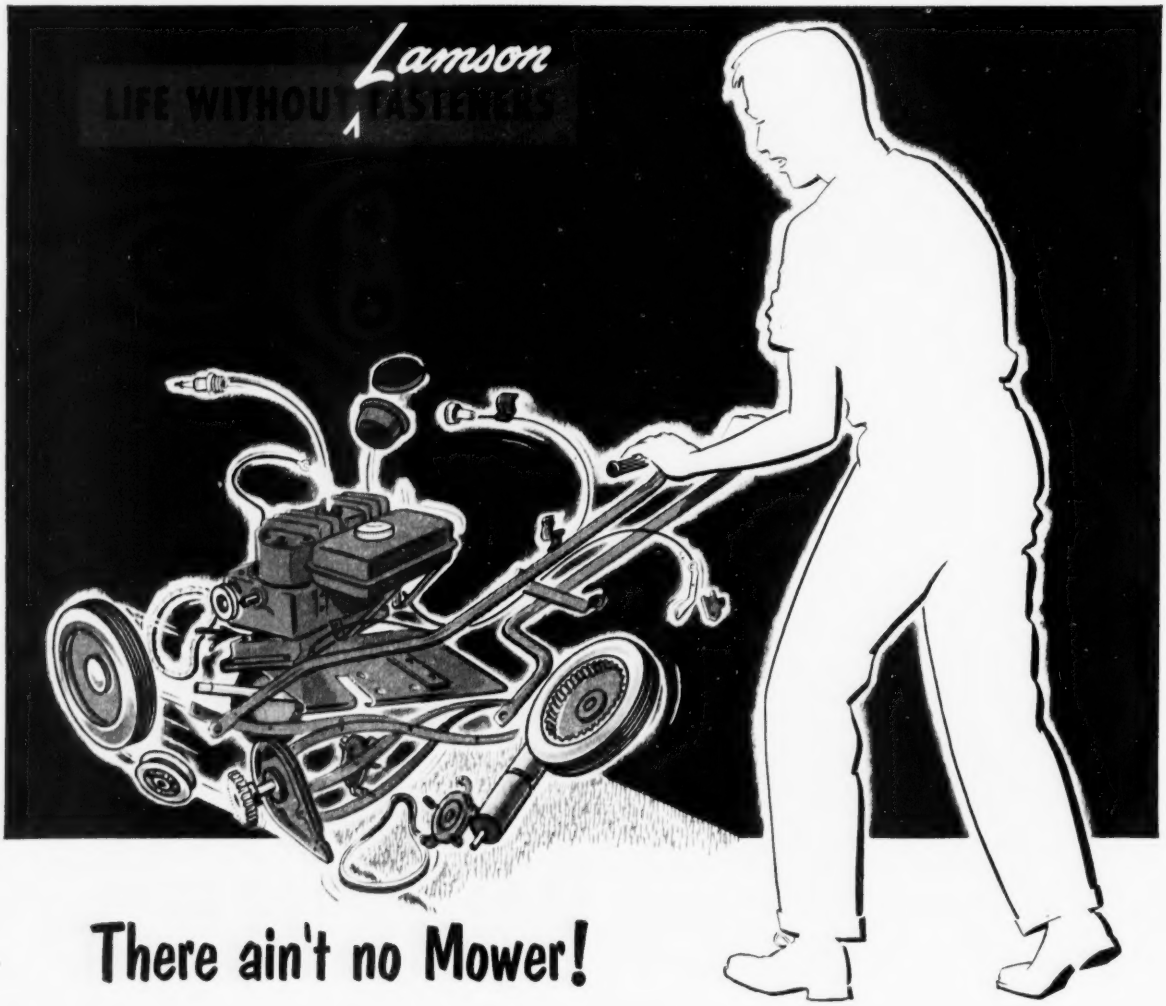
Two-Gun Smith was a man of quick but calculated decisions . . . you might say that he aimed *before* he drew. If he was working for your company, you could bet your bottom dollar he wouldn't fool around when it came time to order dolomite. In that split-second when his hand was poised over his 'phone, his trigger-like mind would be comparing the chemical, physical, and mineralogical properties of all dolomites. And then, moving with the speed of an uncoiling rattler, he'd grab the 'phone and beller: "Send me a carload of BAKER'S MAGDOLITE—the original dad-burned (he means dead-burned) dolomite. It's always 5 ways better . . . Composition, Preparation, Strength, Economy, and Quality!"

JEBCO
PRODUCTS
SINCE 1889
MAKERS OF BAKER'S MAGDOLITE

## THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA

Plants: York, Billmeyer, Pennsylvania—Millersville, Ohio




# There ain't no Mower!

Bolts and nuts are a "grass roots" necessity to the proper functioning of most mechanical products. Take away the bolts and nuts from a motor lawn mower, for instance, and literally "There Ain't No Mower"!

But in spite of their importance, the cost of the fasteners that go into a *single unit* of any product represent a small percent of its total manufacturing cost.

So it's just plain, good common sense always to use bolts and nuts you *know* are dependable as well as economical.

Lamson & Sessions, with 87 years of experience supplying industry with the best in fasteners, offer you unexcelled facilities to meet your bolt, nut and screw requirements.

Remember, it's *pleasant* and *profitable* to do business with Lamson & Sessions.

**Lamson & Sessions**

**The LAMSON & SESSIONS Co.**
**1971 West 85th St. • Cleveland 2, Ohio**
**Plants at Cleveland and Kent, Ohio • Birmingham • Chicago**

*FOR PROMPT DELIVERY AND HELPFUL SERVICE, ORDER FROM YOUR LAMSON DISTRIBUTOR*

**MACHINE SCREWS AND NUTS**
Precision made for fast, economical assembly.

**PLUG NUTS**
Ideal for blind or hard-to-reach places.

**TAPPING SCREWS**
Choice of round, pan, truss, flat oval, hexagon and Phillips heads.

**CAP SCREWS**
Bright and "1035" Hi-Tensile Heat-treated steel.

**SQUARE AND HEX NUTS**
Semi-finished, hot pressed, cold forged.

**LOCK NUTS**
Economical, vibration proof. Can be used repeatedly.

**COTTER PINS**
Steel, brass, aluminum and stainless steel.

**"1035" SET SCREWS**
Cup point type, hardened and heat-treated.

lines he can keep constant vigil on the strip.

**Studio Effect**—To provide sufficient light for the television camera, the mill is lighted like a production studio. Engineers have installed a bank of forty-four 500-w spotlights on 4-foot centers directly above the runout table on which the steel strip travels to the coilers.

Chief advantage of television to the 80-inch hot strip mill is the opportunity it affords to keep a constant watch and spot potential trouble, such as cobbles and pile-ups, in time to make necessary corrections. In this way it will improve strip quality and minimize costly delays, engineers said.

## Pressure-Sensing Control

CONTROL that directly senses engine pressures and replaces complicated electronic equipment is designed to make jet aircraft operation easier and safer. The tiny instrument, so small it can be held in one hand, simulates a miniature jet engine and is known as the Solar Microjet.

Edmund T. Price, Solar president and general manager, says the control has important applications on modern aircraft engines.

**Restricted Details**—While most details about the control are under government secrecy restrictions, Mr. Price reports one company ordered several hundred for use on J46 jet engines at a cost exceeding $200,000. Smaller orders have been received from other companies for testing and experimental purposes.

The simple, pneumatically-operated device, when in action on a jet engine, computes by itself under all flight conditions exactly what the turbine discharge pressure should be. At the same time it notes any error between actual engine pressure and what it should be.

**Pressure Correction**—If there is an error, the unit automatically sends out electrical signals to other engine controls which correct the pressure conditions.

Control is light in weight, rugged, easily installed, requires a minimum of maintenance. According to Mr. Price, it is so fast that pressure variations are recognized in a hundredth of a second.

## High-Jumping Fork Lifts

A world's high-jump record for industrial warehousing with fork trucks is claimed by Admiral Corp. Special fork lift trucks stack 450-pound refrigerators and 350-pound ranges 24 feet in the air at the company's Midwest Mfg. Corp. plant in Chicago. According to the company, such a height is unique in single story warehousing of products of that weight and type with fork lift trucks.

Refrigerators are stored four to the stack and ranges five high. The company has storage capacity for 25,000 refrigerators and 3000 ranges — plus warehouse office space, aisles, a 13-car railroad siding and a truck bay—in a 90,000-sq ft building. If the crates were on one level they would take up more than 185,000 sq ft of storage space.

The 3000-pound trucks have 214-inch masts and can lift two crated refrigerators at a time. They have dual front wheels for stability and hydraulic lines designed to prevent fouling when the mast is raised and lowered.


GLOBE Seamless
GLOWELD Welded

- Resistance to Corrosion
- Strength at High Temperatures
- Resistance to Oxidation at High Temperatures
- Ease of Fabrication

**TYPICAL ANALYSIS AND TYPES:**

| | | | | |
|---|---|---|---|---|
| 302 | 309S | 316Cb | 330 | 410 |
| 302B | 309Cb | 317 | 347 | 430 |
| 304 | 310 | 321 | 403 | 443 |
| 308 | 314 | 329 | 405 | 446 |
| 309 | 316 | INCONEL*—NICHROME** | | |

*Registered U.S. Trade-mark
**Trade-Mark Reg. U.S. Pat. Off. D-H Co.

Globe produces more than 26 standard analyses of stainless steel tubes — also special analyses when required. Because varying analyses have widely varying service characteristics, Globe will make recommendations only after careful study of your particular problem or application.

GLOBE
specialization...
meets your exact requirements in
STAINLESS STEEL TUBES

Write for Bulletin 333 — Corrosion and Heat Resisting Steel Analyses Chart — a valuable reference tabulation of stainless steel analyses as produced by various manufacturers.

Piercing, rolling and reduction of seamless tubes is closely monitored from this control room — typical of the highly specialized equipment in the Globe mill.

**SIZE RANGE:**
Globe seamless stainless steel tubing — sizes ½ inch to 6 inches O.D., pipe sizes ⅛ inch to 6 inches, standard, extra strong and double extra strong weights.
Gloweld electric welded stainless steel tubing — sizes ⅛ inch to 5 inches O.D. Standard weight pipe (schedule 40) sizes ⅛ inch to 2 inches — lightweight pipe (schedule 5 and 10) ⅛ inch to 4½ inches.

**TOLERANCE RANGE:**
All stainless tubing furnished to standard A.S.T.M. specifications unless otherwise specified to suit your particular application requirements.

**Globe specialization gives you uniform high quality . . .**
Precision checks — and re-checks — at every stage of production insure Globe stainless steel tubes that meet *your* exacting specifications. For more than thirty years, specialization in production of steel tubes has keynoted all Globe research, engineering and mill operations. Write for the Globe Stainless Steel Tubes catalog.

GLOBE STEEL TUBES CO.
Milwaukee 46, Wis.

Chicago • Cleveland • Detroit • New York
Philadelphia • St. Louis • Denver • Houston • San Francisco • Glendale, Cal.

Producers of Globe seamless stainless steel tubes—alloy—carbon seamless steel tubes — Gloweld welded stainless steel tubes—Globeiron (high purity ingot-iron) seamless tubes — Globe welding fittings.

# Hob life increased 75%

● The Gear Products Company, St. Louis, Missouri, tried various cutting oils for the hobbing of door latch spur gears from a free machining steel. With the best of the oils, an average of only 600 pieces could be produced before hobs required sharpening.

A Standard Oil lubrication specialist recommended PREMIER Cutting Oil, a light-colored, sulfurized cutting fluid. With the use of PREMIER, an average of 1050 pieces have been produced before hobs have required sharpening—a 75% increase of hob life. Less downtime for tool changes has resulted in higher production. Fewer sharpenings have significantly reduced tool costs.

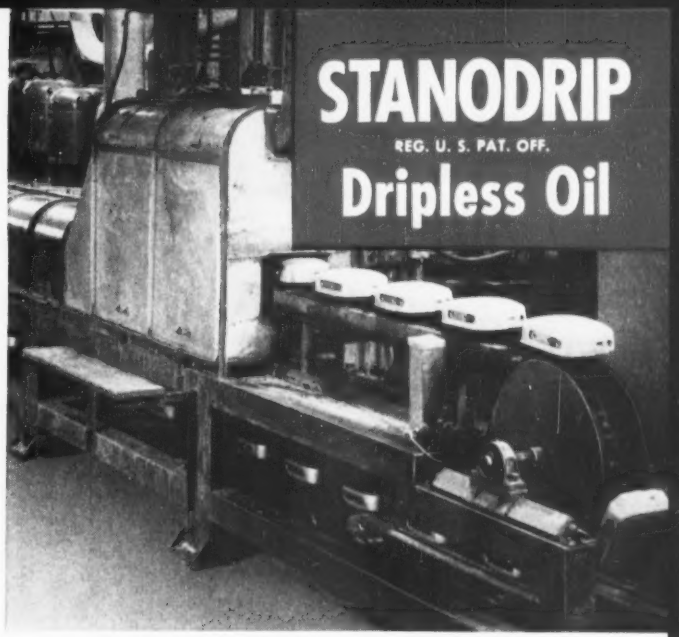
The Gear Products Company, specializing in precision gears, gear trains, now uses PREMIER Cutting Oil for the majority of its gear cutting jobs. This has simplified both stocking and application of cutting oil.

Whether you have a specified problem or are looking for better results, there's a good possibility that a Standard Oil lubrication specialist can help you. His experience and special training are backed by one of the finest and most complete lines of cutting oils and lubricants on the market. You can contact him easily by phoning your local Standard Oil (Indiana) office. Or write: Standard Oil Company, 910 S. Michigan Avenue, Chicago 80, Ill.

# What's YOUR problem?

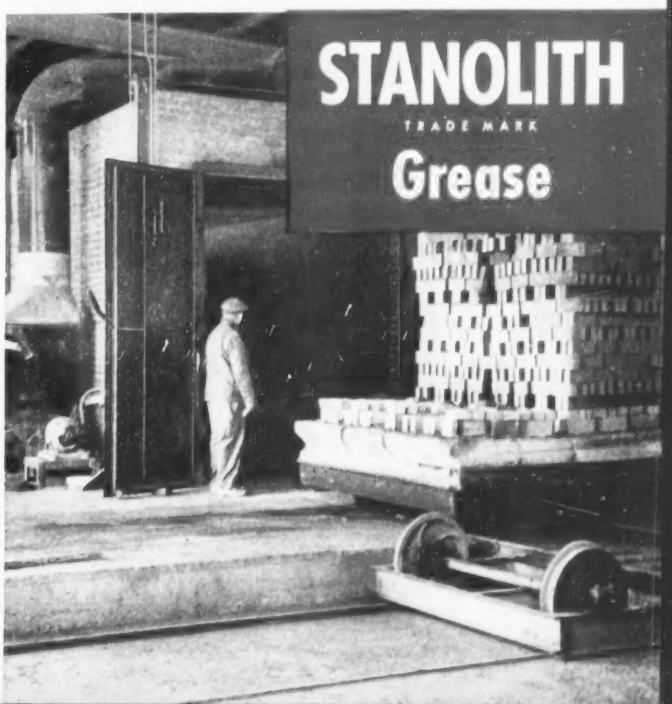
**Fred. H. Moulton,** lubrication specialist in Standard Oil's St. Louis office, worked closely with the Gear Products Company to help them get significantly greater tool life on the hobbing job described at the left.

To help you get better results with cutting oils and lubricants, Standard Oil has a corps of lubrication specialists located throughout the Midwest. One of these men is near your plant. He will give you the assistance you need when you need it. His wide experience and special training in the use of modern lubricants and cutting fluids will help you make real savings. You can reach him quickly and easily by phoning your local Standard Oil Company office. His services are backed by a supply set-up that is unique in the oil industry and that can mean convenience and savings for you.



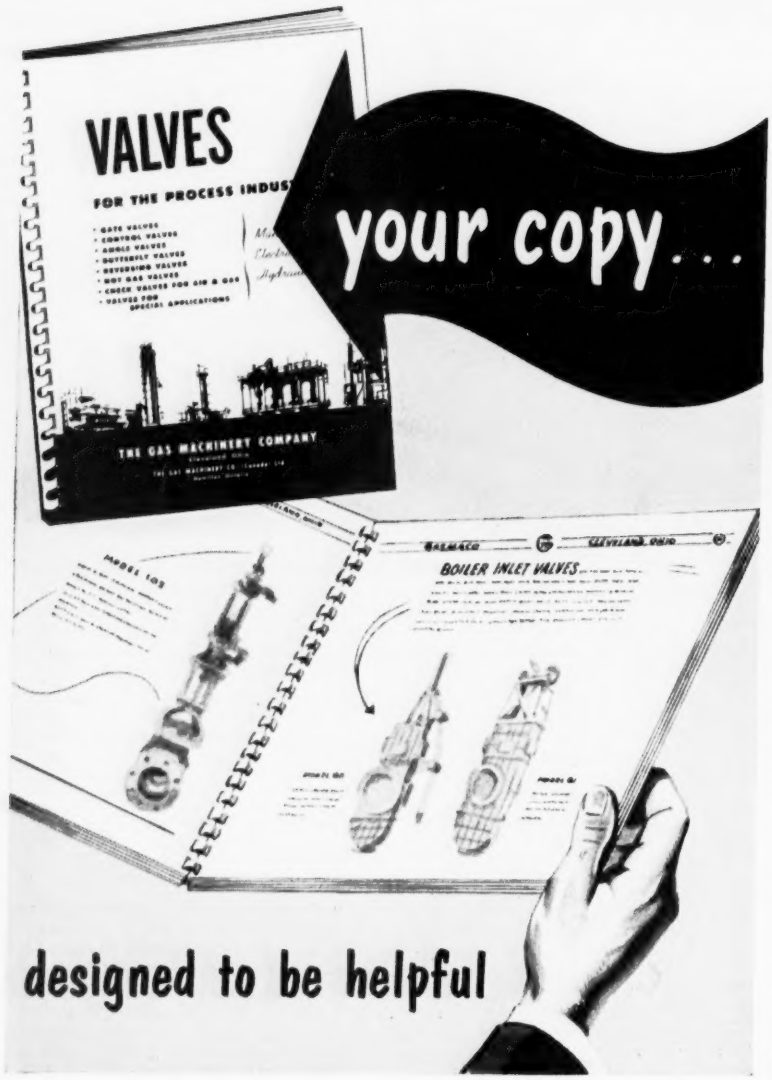

**Polishes off lubrication troubles!** The automatic buffing machine, shown above, represents the engineering ingenuity of the McGraw Electric Company's Toastmaster Products Division, Elgin, Illinois, who designed the machine. Represented, too, in the successful operation of this equipment, is the work of a Standard Oil lubrication specialist. When various lubricants failed to give satisfactory lubrication of conveyor bearings, the Standard lubrication specialist came up with the answer: STANODRIP Dripless Oil. STANODRIP has stopped corrosion and gumming troubles and has reduced bearing wear to a minimum.

**Stops high temperature troubles, cold!** A midwest company was sweating out a problem of lubricating kiln car wheel bearings. Kiln oven temperatures approached 2000° F. and bearing temperatures were around 400° F. Greases tried on the job broke down to form carbon and gummy deposits. Recommended by a Standard Oil lubrication specialist, STANOLITH Grease has stopped troubles, cold! Carbon and gum troubles have been eliminated. Continuous use of kiln cars has permitted greater production.




STANDARD

**STANDARD OIL COMPANY**
(INDIANA)




A new 48-page valve catalog, illustrating all types of Gasmaco valves for the process and gas industries, is just off the press.

The Gas Machinery Company began a specialized service to industry in 1902, a service that includes not only valves but complete gas generating plants and industrial furnaces.

Check your requirements with the valves pictured and described in this attractive catalog, or you may have special applications with which we can be of assistance. Write today for *your* copy of VALVES—Catalog A-205.

**THE GAS MACHINERY COMPANY**
16116 WATERLOO ROAD
CLEVELAND 10, OHIO

Designers • Fabricators • Erectors
Gas Plant Equipment and
Industrial Furnaces
THE GAS MACHINERY CO. (Canada), Ltd.
HAMILTON, ONTARIO

## Surgical Tube Fabrication

Fabrication of fine surgical instruments is a job square tube supplied by Superior Tube Co., Norristown, Pa., fills with merit. Here, tube is soldered to sliding arm forging and pinion housing to tubing. Silver solder lends strength and resists corrosion

## Bagging Diamond Particles

An ordinary sack may be the answer to greater diamond salvage.

At the Edmore, Mich., plant of Carboloy Department, General Electric Co., a common cloth sugar bag is the main "component" of a simple method salvaging diamonds from grinding sludge. It is recapturing enough diamonds in a month to have them made into four or five additional grinding wheels at a nominal cost.

The bag functions somewhat like a coffee strainer. It is tied to the exhaust end of the coolant pipe leading from the machines which grind cemented carbide tools with diamond grinding wheels. When other types of grinding wheels are used on the same machines, the bag is removed to allow coolant and nondiamond sludge to go into the regular coolant reclamation system.

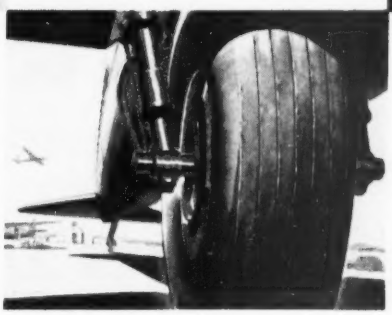
According to K. R. Beardslee, Carboloy's general manager, the bag system still enables coolant to flow into the reclamation system. But instead of making it necessary to clean out all the sludge from the tanks, then processing it for the diamond particles, the bag saves only sludge coming from the diamond grinding wheels.

OSTUCO TUBING is versatile!

OSTUCO TUBING is versatile!

OSTUCO TUBING is versatile!

OSTUCO TUBING is versatile!



OSTUCO TUBING is versatile!

## *a basic material in better design*

From industry's drawing boards come more and more plans for products using OSTUCO Steel Tubing. Strong, light weight, easy to form, OSTUCO Tubing is found in everything from shock-absorbers to sewing machines and tricycles to table lamps. Biggest users of OSTUCO Tubing are industries famed for their standards of high quality—manufacturers of aircraft, automobiles, appliances, electric products, tools, and machinery.

Having our own steel source as a member of the Copperweld family and with facilities modernized and greatly expanded, The Ohio Seamless Tube Company is now, more than ever, *your best single source* . . . a tubing specialist that manufacturers, forges and fabricates all at one plant. Consult our experienced engineers about OSTUCO Tubing for your current requirement or for redesigning your products. Write for new informative catalog, "Ostuco Tubing."

From Your Blueprint . . . to Your Product
OSTUCO TUBING
Tapering • Swaging • Flanging • Bending
Upsetting • Expanding • Reducing • Beading
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Notching • Flattening • Shaping • Trimming
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Manufacturers and Fabricators of Seamless and Electric Welded Steel Tubing

*Plant and General Offices:* SHELBY, OHIO

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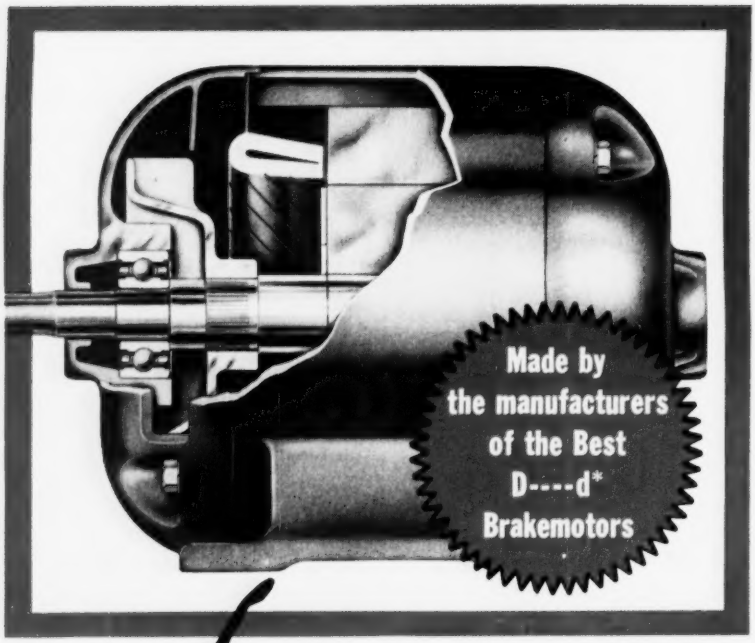



You get *Longer* service life when you specify STAR-KIMBLE squirrel-cage motors

because

**Extra insulation**
—three separate wrappers on every coil—provides added safety factor for possible rises above rated temperature.

**Prelubricated bearings**
—double-width cartridge type—run for years without any attention.

**Ventilating fan**
keeps motor windings cool.

**Dynamic balancing**
of skewed rotor minimizes vibration.

**Smooth lines**
eliminate dust-catching crevices.

*Demanded by industry for tough start-and-stop jobs.

OTHER FEATURES:

Rotor and stator surfaces ground for uniform air gap. Rugged construction—twice as many ribs as used in conventional designs, in frame sizes through NEMA 364. Standard NEMA designs "B", "C" and "D" . . . NEMA C Face and D Flange mountings . . . PLUS a wide range of special electrical and mechanical designs to meet specific needs.

For further information, write for Bulletin B-201

STAR-KIMBLE
MOTOR DIVISION
MIEHLE PRINTING PRESS AND MFG. CO.
220 Bloomfield Avenue Bloomfield, New Jersey

## Analytical Balance Record

**NBS electromechanical instrument records rapid weight changes automatically**

ANALYTICAL balance developed at the National Bureau of Standards automatically makes a continuous record of changes in weight, following even rapid changes with good accuracy. The new instrument is being used at the bureau to record changes in weight of samples of complex minerals during thermal decomposition.

Because it can combine versatility and convenience with low cost, the device is suitable for many other laboratory applications requiring a record of weight as a function of time.

The NBS instrument uses a conventional laboratory balance modified so changes of weight are balanced by adjustment of a magnetizing current. The balancing force results from the interaction of the magnetic field of a solenoid with the field of a permanent bar magnet suspended, inside the solenoid, from one side of the balance.

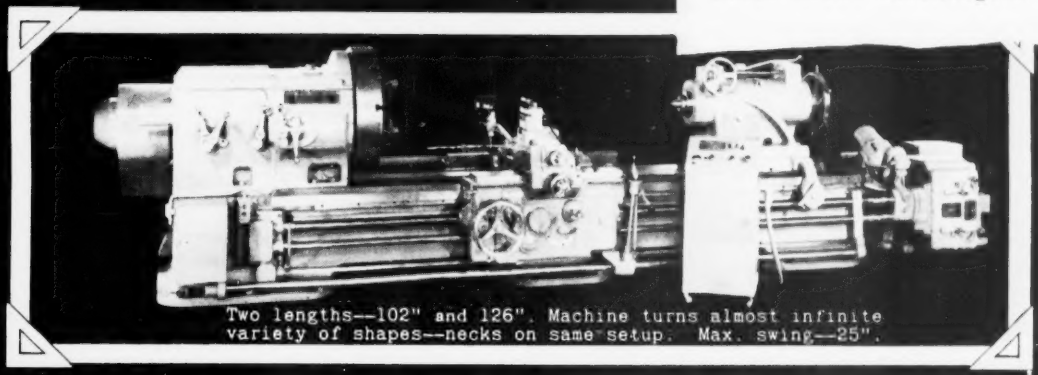
**Photoelectric Sensing** — Automatic balancing is achieved by a photoelectric sensing arrangement in which a beam of light is reflected to a dual phototube from a mirror mounted on the balance beam. The two sections of the phototube are connected in a bridge circuit; output is amplified and applied to the solenoid.

Any change in weight tending to produce unbalance is promptly counteracted by whatever change of solenoid current is needed to maintain balance. An electronic damping circuit eliminates oscillations and enables the electrical output of the instrument to follow accurately very rapid changes of weight.

**Resistor in Series** — Record of weight changes is obtained by connecting a resistor in series with the solenoid and applying the voltage developed across this resistor to a commercial recording potentiometer of the strip-chart type. Since balancing force exerted on the magnet is directly proportional to the current through the solenoid, the weight scale is linear and

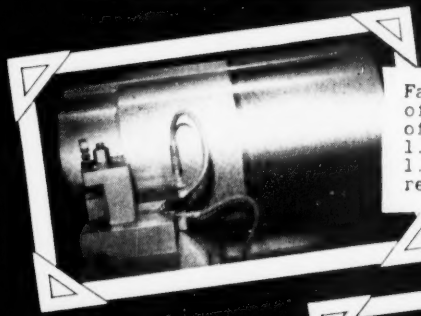
# A SNAP FOR STEEL PRODUCERS!

This Tracer-Controlled Monarch Heavy Duty Roll-Turner Produces 3 to 6 Times Faster! Offers Many Other Great Advantages.



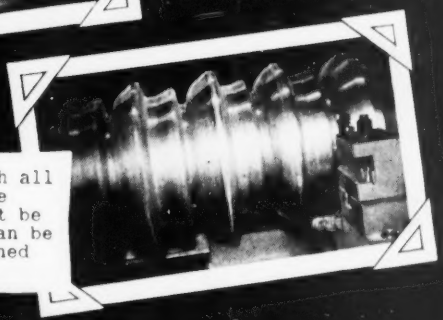
Two lengths—102" and 126". Machine turns almost infinite variety of shapes—necks on same setup. Max. swing—25".

## 1st HOUR



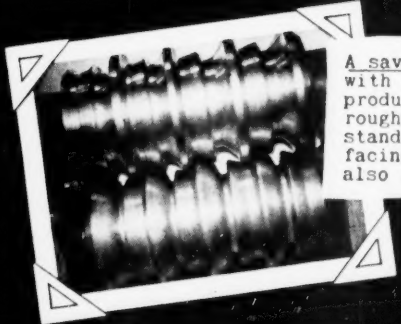
Facing begun on first of pair of rail section rolls. Body of roll—40-1/2". Rolls are 1.56% carbon, 0.77% nickel, 1.13% chromium. Total metal removed, 3730 lbs. per roll.

## 10th HOUR

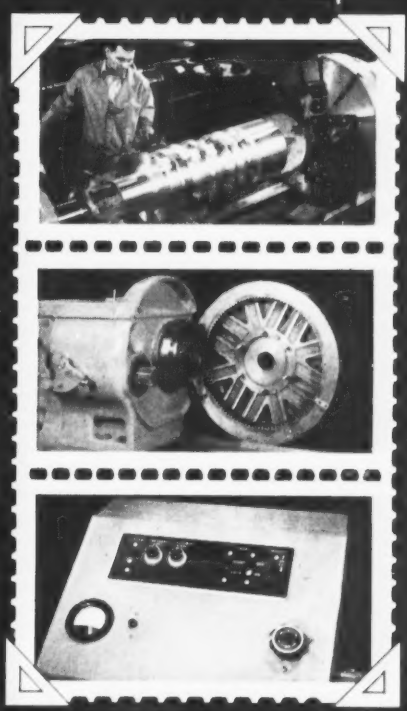


Roughing completed. With all rolls from given template identical, rolls need not be matched in pairs. One can be redressed or new one turned with assured match.

## 26th HOUR



A savings of 99 hours compared with conventional roll lathe production. Both rolls faced, roughed and finished. Only standard carbide round nose and facing tools used—a huge savings also in form tool inventory.



TOP – Another typical operation.

CENTER – Face plate removed. Power applied far from work axis on large diameter rolls.

BOTTOM – Complete push button control exclusive with Monarch.

Focus on Monarch for all your turning needs.

**Monarch**
TURNING MACHINES
ACCURACY • ECONOMY • LONG LIFE

**FOR A GOOD TURN FASTER ...TURN TO MONARCH**

THE MONARCH MACHINE TOOL CO., SIDNEY, OHIO
Please send me without obligation your complete illustrated Heavy Duty Roll-Turner Booklet No. 1302.

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COMPANY _____

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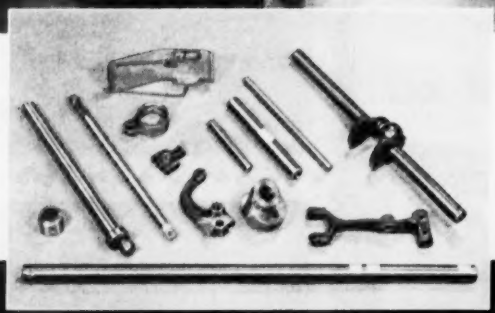

Typical parts heat treated in Hevi Duty furnaces at the Union Special Machine Co.

**UNION SPECIAL**
***heat treats* precision parts in**
**HEVI DUTY FURNACES**

● Over 100 different heat treating operations are represented in one Union Special industrial sewing machine. All the carburizing, dry cyaniding and bright annealing of precision ground shafts, bearings, journals, castings and eccentrics is done in versatile Hevi Duty Vertical Retort Furnaces.

Walter Weinwurm, chief metallurgist at Union Special, says "Our Hevi Duty furnaces do an exceptionally good job of heat treating precision parts. The work comes out of the furnaces clean with no scale or oxidation."

Learn more about Hevi Duty vertical retort furnaces — write for your copy of bulletin HD-646 today.

HEVI DUTY

**HEVI DUTY ELECTRIC COMPANY**
MILWAUKEE 1, WISCONSIN
*Heat Treating Furnaces... Electric Exclusively*
*Dry Type Transformers* *Constant Current Regulators*

the recorder is easily made to read directly in milligrams.

By substituting a different dropping resistor, a different magnet, or both, full scale ranges of as little as 10 milligrams or as much as 1 gram are obtained. For ranges of 100 milligrams or more, accuracy is better than ½ of 1 per cent of full scale.

According to the bureau, one contemplated use is in the study of high-temperature oxidation resistance for certain of the cermets now being tried as turbine blade materials.

## Atomic Power Group Enlarged

Twelve more companies have been approved by the Atomic Energy Commission for association with the Dow-Detroit atomic power project. They are: Consolidated Gas Electric Light and Power Co. of Baltimore, Hartford Electric Light Co., Niagara Mohawk Power Corp., Potomac Electric Power Co., Rochester Gas & Electric Corp., Southern Co., Allis-Chalmers Manufacturing Co., Bendix Aviation Corp., Ford Motor Co., United Engineers & Constructors Inc., Atlantic City Electric Co. and Gibbs & Cox Inc.

Dow Chemical Co. and Detroit Edison Co. are the two principal participants in this group, which is engaged in a joint study with the AEC. They are exploring the possibility of developing a nuclear reactor to produce power. With the new additions the association has 25 members.

## MIT Stages Handling Course

Mechanical engineering department of Massachusetts Institute of Technology will present the 1953 industrial packaging and materials handling technical short course in October in Boston.

Society of Industrial Packaging and Materials Handling Engineers will sponsor the course as part of its annual triple packaging and handling project. This includes the short course, packaging and handling exposition, and protective packaging and handling competition.

The four-day short course will begin Monday, Oct. 19; the exposition will open the following day in Mechanics' Hall.

# Here comes Aluminum

The amount of electricity it takes to produce one ton of aluminum is enough to light your house for 15 years! Thus aluminum production takes a lot of water power.

The torrent above is a view of the mighty Saguenay River, which turns the turbines of the 1,500,000-horsepower Shipshaw hydroelectric plant that supplies power for the Aluminum Company of Canada—one of the world's great aluminum producers.

Alcan, as most of us in the business call it, is one of the Aluminium Limited companies, whose products we distribute.

Utilizing great power resources and modern production facilities, we are supplying millions of pounds of aluminum which are being employed to strengthen transportation, essential industry, and military security. At the same time, we are striving to relieve the shortage of aluminum for the thousands of other uses where its qualities are desirable—and desired.

**ALUMINUM IMPORT CORPORATION**

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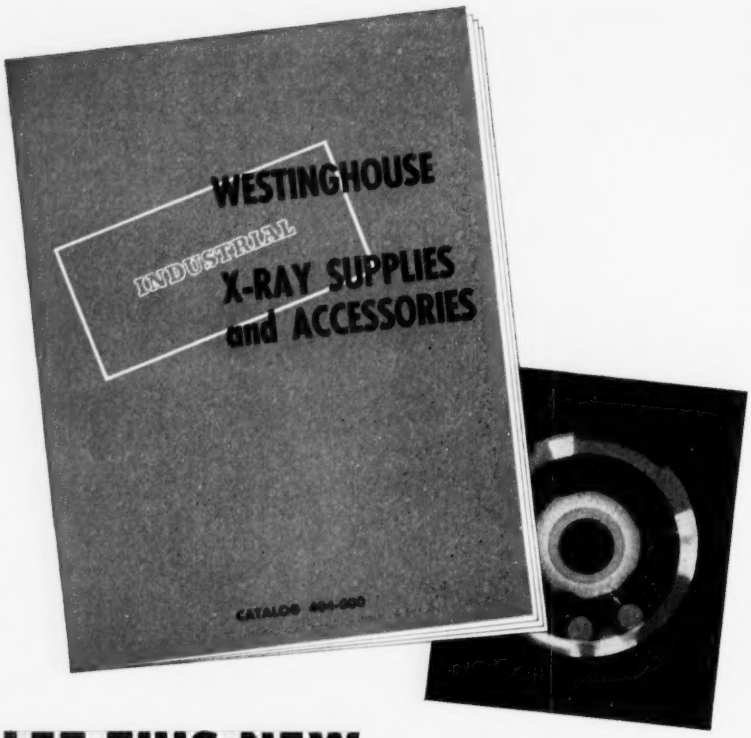


**LET THIS NEW WESTINGHOUSE CATALOG INCREASE X-RAY EFFICIENCY**

Better, cheaper, faster radiographic testing is a product of trained personnel plus proper equipment.

The new Westinghouse Industrial Supplies and Accessories Catalog has 44 pages listing over 600 items of film, chemicals, equipment, tools, and devices. The advantages and uses of each product are carefully explained.

In initiating, expanding, or refurbishing your radiographic program, call your nearest Westinghouse X-ray office (listed in the catalog or your phone book). There you will find men of wide experience who can help you toward an efficient, modestly priced arrangement.

Use the coupon or call your Westinghouse X-ray representative for a copy. It means faster, cheaper, better radiographs.

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Westinghouse Electric Corporation
X-ray Division, Industrial Application Dept. R66,
2519 Wilkens Avenue
Baltimore 3, Maryland

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Please send me a copy of the new booklet "Industrial X-ray Supplies and Accessories."

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## Diamond Standards Ahead

MORE EFFECTIVE use of industrial diamonds as an element in defense production is the objective of a project to be started soon under procedure of American Standards Association.

This was announced by Vice Adm. G. F. Hussey Jr., managing director of ASA, following a general conference of interested groups which recommended the standardization project. Tool engineers, the diamond trade, machine tool builders, industries using diamond tools, engineering societies, and the armed forces, were represented.

**Definitions**—The project aims at interchangeability of diamond tools and their holders. The conference defined a diamond tool as the combination of a diamond and the nib or shank directly carrying it. A holder was defined as the fixture holding the diamond tool in the machine with which it is used.

"Such a large variety of diamond tools and holders have been developed over the years that there is no interchangeability between these parts," Adm. Hussey said. The ASA hopes to remedy this situation and eliminate the present necessity of stocking an excessively large number of different replacement parts.

The scope of the work to be undertaken was tentatively defined to cover terminology and definitions applying to loose diamonds and diamond tools, and dimensions of diamond tools and tool holding accessories.

**Sponsorship** — The conference recommended that American Socety of Tool Engineers and Industrial Diamond Association of America be invited to accept joint sponsorship of the project and organize a technical committee to develop standards in this field.

Organizations represented at the general conference were: American Society of Mechanical Engineers; American Society for Testing Materials; American Society of Tool Engineers; Automobile Manufacturers Association; Industrial Diamond Association of American; National Machine Tool Builders Association; and U. S. Department of the Air Force.

# Superior *Type* 430 Stainless

for heat applications

resists oxidation

does not corrode

fabricates easily

stays strong and tough

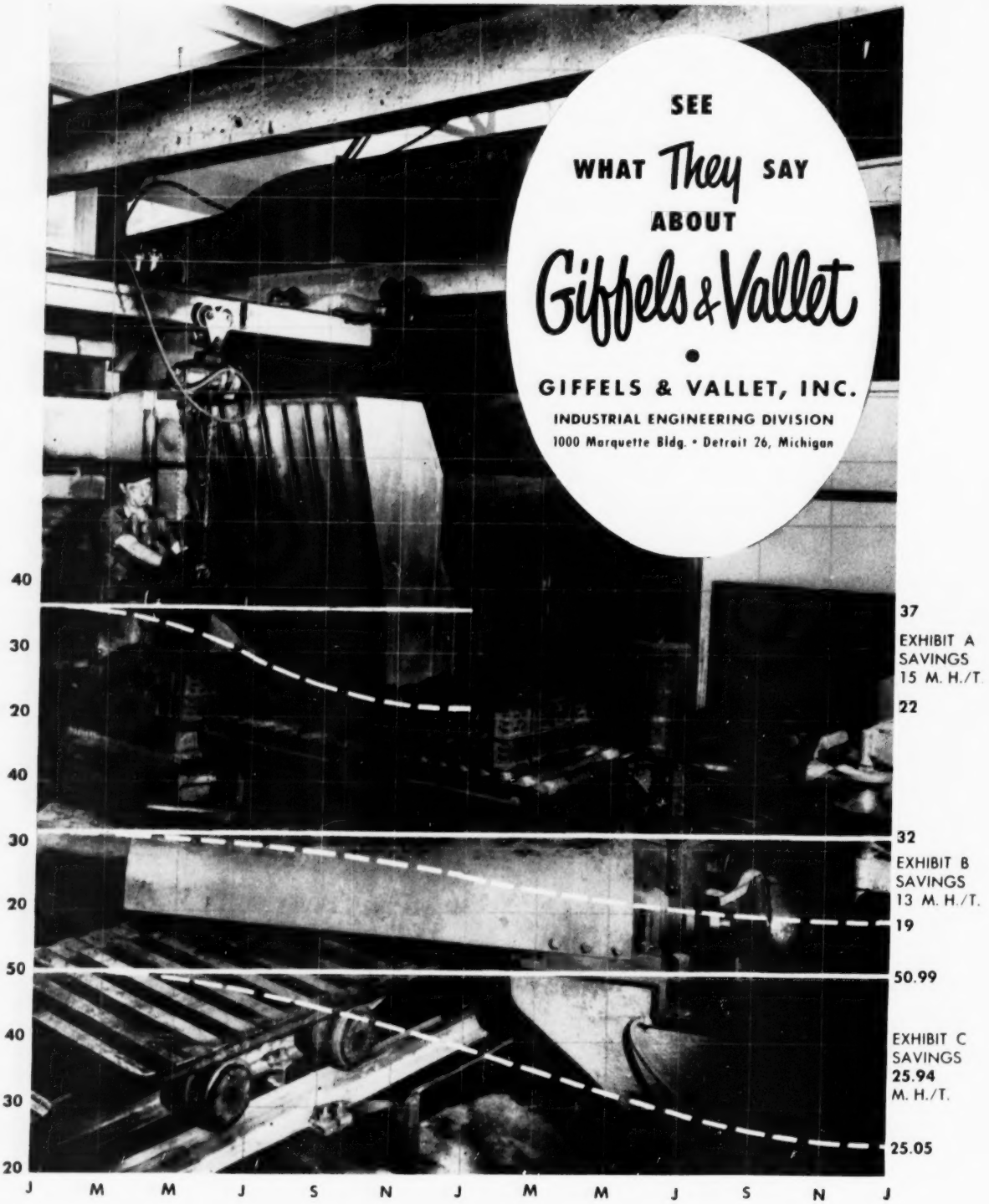
In the broad electric heating field, from domestic ranges to heavy-duty industrial units, Superior 430 Stainless enjoys time-tried favor. ● Used for trim rings, coil supports and medallions of range elements, this sturdy steel stays bright, stands up to heat, resists abrasion. As sheathing for high-temperature strip, ring, tubular and cartridge heaters, Superior 430 Stainless fabricates smoothly, easily and resists corrosion.

● Our 430 Stainless is available in easy handling coils. *Write!*

Superior Steel

CORPORATION

CARNEGIE, PENNSYLVANIA




**THREE ACTUAL EXAMPLES OF SAVINGS IN MAN HOURS PER TON IN A STEEL CASTINGS CLEANING ROOM AND IN AUTOMOTIVE GREY IRON CASTINGS**

Names of these firms upon request

# The Market Outlook

WATCH the household appliance industry for an early clue as to the trend of business and the demand for steel.

This industry's production is exceeding demand, and for the moment the surplus output is going into storage. In some cases, the producers' storage space is full and they are seeking rental storage space. That can't go on forever.

**WORTH THE GAMBLE**—However, appliance makers are reluctant to cut back on production. They still have hopes of good sales this spring. Even if sales are disappointing, heavy warehouse stocks of appliances would be like money in the bank if production were interrupted by strikes. One of the most crippling strikes would be a steel strike, but at the moment the likelihood of one appears remote.

Until warehouse stocks of appliances become top-heavy, producers will not be inclined to reduce their steel purchases. They remember how difficult it has been to get steel, and they don't want to lose their positions on steel mill order books.

**AUTOMAKERS WATCH**—A cutback in steel buying by the appliance producers would be welcomed by the automakers, who have been struggling to line up enough steel to cover their expansive production schedules, which, if adhered to, might this year set a new record for output.

Of course, there's always the danger that the conditions that reduce appliance sales will also hurt the auto industry.

While the auto industry has not built up alarmingly large stocks of new cars, it has been producing in excess of sales. Auto dealers' inventories of new autos have been creeping up about one car a month. On May 1 they averaged 12.8 cars per dealer. A year earlier the figure was 7.7.

**WHERE AX WOULD FALL**—Perhaps the auto industry, too, figures substantial stocks are good protection in event of a strike. But if the stocks continue to swell, watch for the auto producers to tighten up on their steel buying. Among the first reflections of such a move would be a drop in demand for conversion steel and other such premium cost steel.

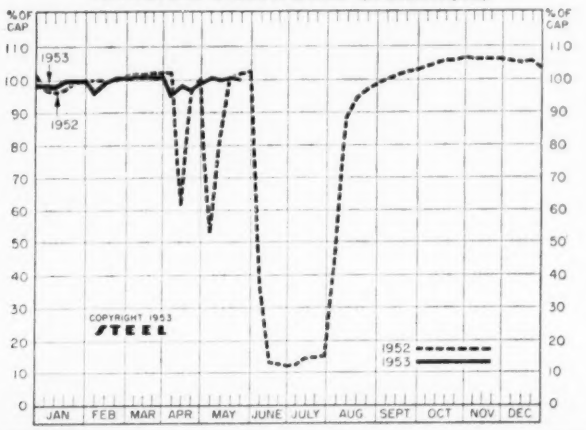
Meanwhile, the demand for steel remains strong, so much so that increases of steel price extras have brought but little opposition, except in some instances at the warehouse level. And even there, demand is sustained. One reaction to the increase in extras is to try to switch to specifications that will involve the lowest net cost.

**PRICE REFLECTIONS**—A measure of the increase resulting from the adjustment of extras is the finished steel price index of the U. S. Bureau of Labor Statistics. For the week ended May 19, it had risen to 135.8 per cent of the 1947-1949 average (see p. 204). In the preceding week the index was 133.7 and before the raises in extras began it was 130.7.

**MANEUVERING ON WAGES**—Most of the steel increases have been on extras. Any general increase in base prices will await outcome of current wage negotiations in the steel industry. No specific amount of wage raise has been asked by the union; it would like to hear what the companies will offer.

**CAPACITY PACE**—In response to the strong demand for steel, output of steel for ingots and castings continues at capacity level, the rate for the week ended May 23 being 100 per cent of capacity, a half-point decline from the preceding week.

## NATIONAL STEELWORKS OPERATIONS




## DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

| | Week Ended May 23 | Change | Same 1952 | Week 1951 |
|---|---|---|---|---|
| Pittsburgh | 99 | + 1.5* | 103.5 | 96.5 |
| Chicago | 106 | — 0.5* | 105 | 107 |
| Mid-Atlantic | 97.5 | 0 | 94 | 101.5 |
| Youngstown | 105 | 0 | 105 | 105 |
| Wheeling | 101.5 | + 0.5 | 97.5 | 99 |
| Cleveland | 104 | + 3* | 107 | 101.5 |
| Buffalo | 106.5 | 0 | 104 | 104 |
| Birmingham | 101 | — 1 | 102 | 100 |
| New England | 85 | — 8 | 70 | 92 |
| Cincinnati | 98.5 | + 1.5 | 94.5 | 104 |
| St. Louis | 89.5 | — 2.5 | 87 | 99.5 |
| Detroit | 108 | — 6.5 | 110 | 106 |
| Western | 109 | — 1 | 104 | 103 |
| Estimated National Rate | 100 | — 0.5 | 102 | 103.5 |

* Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,634 tons in 1951.

The Metalworking Outlook—p. 57 Production-Engineering News—p. 115

# Composite Market Averages

| FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics | May 19 1953 | May 12 1953 | Month Ago | April Average |
|---|---|---|---|---|
| (1947-1949=100) | 135.8 | 133.7* | 130.7 | 130.7 |

*Revised

**AVERAGE PRICES (BUREAU OF LABOR STATISTICS)**
**Week Ended May 19, 1953**

Units are 100 lb except where otherwise noted. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

| | | | |
|---|---|---|---|
| Rails | $4.075 | Sheets, C.R. carbon | $5.625 |
| Track spikes | 6.725 | Sheets, galv. | 6.765 |
| Track bolts | 10.175 | Strip, C.R., carbon | 5.100 |
| Tie plates | 4.925 | Strip, C.R. stainless (lb) | 0.333 |
| Joint bars | 5.075 | Pipe, black, buttweld (100 ft) | 7.374 |
| Plates, carbon | 4.288 | Pipe, galv., buttweld (100 ft) | 9.084 |
| Structural shapes | 4.400 | Boiler tubes (100 ft) | $1.663 |
| Bars, tool steel (lb) | 1.580 | Tin plate (100 lb base box) | 8.950 |
| Bars, 3120 alloy | 7.025 | Terne plate (100 lb base box) | 7.750 |
| Bars, stainless (lb) | 0.153 | Wire, carbon, merchant | 6.392 |
| Bars, carbon | 4.400 | Wire, fence, galv. | 7.017 |
| Bars, reinforcing | 4.250 | Nails (100 lb keg) | 7.410 |
| Bars, C.F. carbon | 6.275 | Wire, barbed (80 rod spool) | 6.160 |
| Sheets, H.R., carbon | 4.375 | Woven wire fence (20 rod roll) | 13.629 |

**FINISHED PRICE INDEX, Weighted:**

| Calculated by STEEL* | May 21 1953 | Week Ago | Month Ago | Year Ago | 5 Yrs. Ago |
|---|---|---|---|---|---|
| Index (1935-39 av.=100) | 182.82 | 181.88† | 181.31 | 171.92 | 135.02 |
| Index in cents per lb. | 4.953 | 4.927† | 4.912 | 4.657 | 3.658 |

**ARITHMETICAL PRICE COMPOSITES:**

| Calculated by STEEL* | | | | | |
|---|---|---|---|---|---|
| Finished Steel NT | $111.28 | $110.98 | $110.98 | $106.32 | $80.27 |
| No. 2 Fdry. Pig Iron, GT | 55.04 | 55.04 | 55.04 | 52.54 | 40.59 |
| Basic Pig Iron, GT | 54.66 | 54.66 | 54.66 | 52.16 | 40.12 |
| Malleable Pig Iron, GT | 55.77 | 55.77 | 55.77 | 53.27 | 41.12 |
| Steelmaking Scrap, GT | 39.00 | 38.83 | 42.67 | 43.00 | 40.67 |

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

† Revised

# Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

| FINISHED MATERIALS | May 21 1953 | Week Ago | Month Ago | Year Ago | 5 Yrs. Ago |
|---|---|---|---|---|---|
| Bars, H.R., Pittsburgh | 3.95 | 3.95 | 3.95 | 3.70 | 2.875 |
| Bars, H.R., Chicago | 3.95 | 3.95 | 3.95 | 3.70 | 2.875 |
| Bars, H.R., del. Philadelphia | 4.502 | 4.502 | 4.502 | 4.252 | 3.356 |
| Bars, C.F., Pittsburgh | 4.925 | 4.925 | 4.925 | 4.55 | 3.50 |
| Shapes, Std., Pittsburgh | 3.85 | 3.85 | 3.85 | 3.65 | 2.775 |
| Shapes, Std., Chicago | 3.85 | 3.85 | 3.85 | 3.65 | 2.775 |
| Shapes, del., Philadelphia | 4.13 | 4.13 | 4.13 | 3.93 | 2.98 |
| Plates, Pittsburgh | 3.90 | 3.90 | 3.90 | 3.70 | 2.925 |
| Plates, Chicago | 3.90 | 3.90 | 3.90 | 3.70 | 2.925 |
| Plates, Coatesville, Pa. | 4.35 | 4.35 | 4.35 | 4.15 | 3.45 |
| Plates, Sparrows Point, Md. | 3.90 | 3.90 | 3.90 | 3.70 | 2.95 |
| Plates, Claymont, Del. | 4.35 | 4.35 | 4.35 | 4.15 | 3.65 |
| Sheets, H.R., Pittsburgh | 3.775 | 3.775 | 3.775 | 3.60-75 | 2.775 |
| Sheets, H.R., Chicago | 3.775 | 3.775 | 3.775 | 3.60 | 2.775 |
| Sheets, C.R., Pittsburgh | 4.575 | 4.575 | 4.575 | 4.35 | 3.50 |
| Sheets, C.R., Chicago | 4.575 | 4.575 | 4.575 | 4.35 | 3.50 |
| Sheets, C.R., Detroit | 4.775 | 4.775 | 4.775 | 4.55 | 3.76 |
| Sheets, Galv., Pittsburgh | 5.075 | 5.075 | 5.075 | 4.80 | 3.90 |
| Strip, H. R., Pitts. | 3.975-4.225 | 3.975-4.225 | 3.975-4.225 | 3.75-4.00 | 3.05 |
| Strip, H.R., Chicago | 3.725 | 3.725 | 3.725 | 3.50 | 2.775 |
| Strip, C.R., Pittsburgh | 5.10-5.80 | 5.10-5.80 | 5.10-5.80 | 4.65-5.35 | 3.775 |
| Strip, C.R., Chicago | 5.35 | 5.35 | 5.35 | 4.90 | 3.60 |
| Strip, C.R., Detroit | 5.30-6.05 | 5.30-6.05 | 5.30-6.05 | 4.85-5.60 | 3.735 |
| Wire, Basic, Pitts. | 5.475-5.225 | 5.475-5.225 | 5.475-5.225 | 4.85-5.10 | 3.725 |
| Nails, Wire, Pittsburgh | 6.35 | 6.35 | 6.35 | 5.90-6.20 | 5.125 |
| Tin plate, box, Pittsburgh | $8.95 | $8.95 | $8.95 | $8.70 | $6.65 |
| **SEMIFINISHED** | | | | | |
| Billets, forging, Pitts. (NT) | $70.50 | $70.50 | $70.50 | $66.00 | $54.00 |
| Wire rods, ¼-⅝", Pitts. | 4.425 | 4.425 | 4.425 | 4.10-30 | 3.175 |
| **PIG IRON, Gross Ton** | | | | | |
| Bessemer, Pitts. | $55.50 | $55.50 | $55.50 | $53.00 | $40.00 |
| Basic, Valley | 54.50 | 54.50 | 54.50 | 52.00 | 39.00 |
| Basic, del. Phila. | 59.25 | 59.25 | 59.25 | 56.75 | 42.17 |
| No. 2 Fdry, Pitts. | 55.00 | 55.00 | 55.00 | 52.50 | 39.50 |
| No. 2 Fdry, Chicago | 55.00 | 55.00 | 55.00 | 52.50 | 39.00 |
| No. 2 Fdry, Valley | 55.00 | 55.00 | 55.00 | 52.50 | 39.50 |
| No. 2 Fdry, del. Phila. | 59.75 | 59.75 | 59.75 | 57.25 | 42.67 |
| No. 2 Fdry, Birm. | 51.38 | 51.38 | 51.38 | 48.88 | 38.88 |
| No. 2 Fdry (Birm.) del. Cin. | 58.93 | 58.93 | 58.93 | 55.49 | 45.71 |
| Malleable, Valley | 55.00 | 55.00 | 55.00 | 52.50 | 39.50 |
| Malleable, Chicago | 55.00 | 55.00 | 55.00 | 52.50 | 39.50 |
| Charcoal, Lyles, Tenn. | 68.50 | 68.50 | 68.50 | 66.00 | 58.00 |
| Ferromanganese, Etna, Pa. | 200.00† | 200.00† | 196.07† | 188.00‡ | 151.00* |

*F.o.b. cars, Pittsburgh; 78-82% Mn, per gross ton. †74-76% Mn, per net ton. ‡78-82% Mn, per gross ton.

**SCRAP, Gross Ton (Including broker's commission)**

| | | | | | |
|---|---|---|---|---|---|
| No. 1 Heavy Melt, Pitts. | $39.50 | $39.50 | $44.00 | $44.00 | $40.25 |
| No. 1 Heavy Melt, E. Pa. | 41.50 | 41.00 | 43.50 | 42.50 | 42.50 |
| No. 1 Heavy Melt, Chicago | 36.00 | 36.00 | 40.50 | 42.50 | 39.25 |
| No. 1 Heavy Melt, Valley | 41.50 | 41.50 | 42.00 | 44.00 | 40.25 |
| No. 1 Heavy Melt, Cleve. | 39.00 | 39.00 | 42.00 | 43.00 | 39.75 |
| No. 1 Heavy Melt, Buffalo | 41.75 | 41.75 | 45.50 | 43.00 | 44.50 |
| Rails Rerolling, Chicago | 47.50 | 47.50 | 51.50 | 52.50 | 52.50 |
| No. 1 Cast, Chicago | 39.50 | 41.50 | 42.50 | 49.00† | 69.00 |

†F.o.b. shipping point.

**COKE, Net Ton**

| | | | | | |
|---|---|---|---|---|---|
| Beehive, Furn, Connlsvl. | $14.75 | $14.75 | $14.75 | $14.75 | $12.75 |
| Beehive, Fdry, Connlsvl. | 17.00 | 17.00 | 17.00 | 17.50 | 14.875 |
| Oven Fdry, Chicago | 24.50 | 24.50 | 24.50 | 23.00 | 19.50 |

# PIG IRON

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on pages 186-187.

| PIG IRON, Gross Ton | Basic | No. 2 Foundry | Malleable | Bessemer |
|---|---|---|---|---|
| Bethlehem, Pa. B2 | $56.50 | $57.00 | $57.50 | $58.00 |
| NewYork, del. | .... | 60.78 | 61.28 | .... |
| Newark, del. | 59.52 | 60.02 | 60.52 | 61.02 |
| Philadelphia, del. | 59.25 | 59.75 | 60.25 | 60.75 |
| *Birmingham District* | | | | |
| AlabamaCity, Ala. R2 | 50.88 | 51.38 | .... | .... |
| Birmingham R2 | 50.88 | 51.38 | .... | .... |
| Birmingham S9 | .... | 51.38 | .... | .... |
| Woodward, Ala. W15 | 50.88 | 51.38 | .... | .... |
| Cincinnati, del. | .... | 58.93 | .... | .... |
| *Buffalo District* | | | | |
| Buffalo R2 | 54.50 | 55.00 | 55.50 | .... |
| Buffalo H1 | 54.50 | 55.00 | 55.50 | .... |
| Tonawanda, N.Y. W12 | 54.50 | 55.00 | 55.50 | .... |
| No. Tonawanda, N.Y. T9 | .... | 55.00 | 55.50 | .... |
| Boston, del. | 65.15 | 65.65 | 66.15 | .... |
| Rochester, N.Y., del. | 57.52 | 58.02 | 58.52 | .... |
| Syracuse, N.Y., del. | 58.62 | 59.12 | 59.62 | .... |
| *Chicago District* | | | | |
| Chicago I-3 | 54.50 | 55.00 | 55.00 | 55.50 |
| Gary, Ind. U5 | 54.50 | .... | 55.00 | .... |
| Indiana Harbor, Ind. I-2 | 54.50 | .... | 55.00 | .... |
| So. Chicago, Ill. W14 | 54.50 | 55.00 | 55.00 | .... |
| So. Chicago, Ill. Y1 | 54.50 | 55.00 | 55.00 | .... |
| So. Chicago, Ill. U5 | 54.50 | .... | 55.00 | 55.50 |
| Milwaukee, del. | 56.67 | 57.17 | 57.17 | 57.67 |
| Muskegon, Mich., del. | .... | 61.30 | 61.30 | .... |
| *Cleveland District* | | | | |
| Cleveland A7 | 54.50 | 55.00 | 55.00 | 55.50 |
| Cleveland R2 | 54.50 | 55.00 | 55.00 | .... |
| Akron, O., del. from Cleve. | 57.11 | 57.61 | 57.61 | 58.11 |
| Lorain, O. N3 | 54.50 | .... | .... | 55.50 |
| Duluth I-3 | .... | .... | 55.00 | .... |
| Erie, Pa. I-3 | 54.50 | 55.00 | 55.00 | 55.50 |
| Everett, Mass. E1 | .... | 59.50 | 60.00 | .... |
| Fontana, Calif. K1 | 60.50 | 61.00 | .... | .... |
| GraniteCity, Ill. G4 | 56.40 | 56.90 | 57.40 | .... |
| St. Louis, del. (inc. tax) | 57.15 | 57.65 | 58.15 | .... |
| Ironton, Utah C11 | 54.50 | 55.00 | .... | .... |
| Geneva, Utah C11 | 54.50 | 55.00 | .... | .... |
| LoneStar, Tex. L6 | 50.50 | *51.00 | 51.00 | .... |
| Minnequa, Colo. C10 | 56.50 | 57.50 | 57.50 | .... |
| Rockwood, Tenn. T3 | .... | .... | 58.50 | .... |
| *Pittsburgh District* | | | | |
| Neville Island, Pa. P6 | .... | 55.00 | 55.00 | 55.50 |
| Pitts., N.&S. sides, Ambridge Aliquippa, del. | .... | 56.37 | 56.37 | 56.87 |
| McKeesRocks, del. | .... | 56.04 | 56.04 | 56.54 |
| Lawrenceville, Homestead, Wilmerding, Monaca, del. | .... | 56.66 | 56.66 | 57.16 |
| Verona, Trafford, del. | .... | 57.19 | 57.19 | 57.69 |
| Brackenridge, del. | .... | 57.45 | 57.45 | 57.95 |
| Bessemer, Pa. U5 | 54.50 | .... | 55.00 | 55.50 |
| Clairton, Rankin, So. Duquesne, Pa. U5 | 54.50 | .... | .... | .... |
| McKeesport, Pa. N3 | 54.50 | .... | .... | 55.50 |
| Monessen, Pa. P7 | 56.50 | .... | .... | .... |
| Sharpsville, Pa. S6 | .... | .... | 55.00 | 55.50 |
| Steelton, Pa. B2 | 56.50 | 57.00 | 57.50 | 58.00 |
| Swedeland, Pa. A3 | 58.50 | 59.00 | 59.50 | 60.00 |
| Toledo, O. I-3 | 54.50 | 55.00 | 55.00 | 55.50 |
| Cincinnati, del. | 59.97 | 60.47 | .... | .... |
| Troy, N.Y. R2 | 56.50 | 57.00 | 57.50 | 58.00 |
| *Youngstown District* | | | | |
| Hubbard, O. Y1 | 54.50 | 55.00 | 55.00 | .... |
| Youngstown Y1 | 54.50 | 55.00 | 55.00 | .... |
| Youngstown U5 | 54.50 | .... | .... | 55.50 |
| Mansfield, O., del. | 59.15 | 59.65 | 59.65 | 60.15 |

*Low phos, southern grade.

**PIG IRON DIFFERENTIALS**

*Silicon:* Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

*Phosphorus:* Deduct 38 cents per ton for P content of 0.70% and over.

*Manganese:* Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

*Nickel:* Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

**BLAST FURNACE SILVERY PIG IRON, Gross Ton**

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

| | |
|---|---|
| Jackson, O. G2, J1 | $65.50 |
| Buffalo H1 | 66.75 |

**ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton**

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

| | |
|---|---|
| NiagaraFalls, N.Y. P15 | $91.00 |
| Keokuk, Iowa, Openhearth & Fdry, freight allowed K2 | 92.50 |
| Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2 | 95.50 |
| Wenatchee, Wash., OH & Fdry., freight allowed K2 | 92.50 |

**CHARCOAL PIG IRON, Gross Ton**

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

| | |
|---|---|
| Lyles, Tenn. T3 | $68.50 |

**LOW PHOSPHORUS PIG IRON, Gross Ton**

| | |
|---|---|
| Cleveland, intermediate, A7 | $59.50 |
| Steelton, Pa. B2 | 62.50 |
| Philadelphia, delivered | 66.05 |
| Troy, N.Y. R2 | 62.50 |

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# NONFERROUS METALS

**(Cents per pound, carlots, except as otherwise noted)**

## Primary Metals

**Copper:** Electrolytic 29.75-30.00c, Conn. Valley; Lake nom.; foreign electrolytic, del. 29.50-30.00c.

**Brass Ingots:** 85-5-5-5 (No. 115) 26.00c; 88-10-2 (No. 215) 34.75c; 80-10-10 (No. 305) 30.00c; No. 1 yellow (No. 405) 21.25c.

**Zinc:** Prime western 11.00c; brass special 11.25c, intermediate 11.50c; East St. Louis; high grade 12.35c, and special high grade 12.50c delivered.

**Lead:** Common 12.80c; chemical 12.90c; corroding, 12.90c; St. Louis.

**Primary Aluminum:** 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

**Secondary Aluminum:** Piston alloys 22.50-22.75; No. 12 foundry alloy (No. 2 grade) 22.00-22.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.00-23.25; grade 2, 22.50; grade 3, 21.50-22.00; grade 4, 20.50-21.00.

**Magnesium:** Commercially pure (99.8%) standard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

**Tin:** Grade A, prompt RFC, 121.50c; outside market 100.00c.

**Antimony:** American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

**Nickel:** Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

**Mercury:** Open market, spot, New York, $195-$198, per 76-lb flask.

**Cadmium:** "Regular" straight or flat forms, $2 deld.; special or patented shapes $2.15.

**Beryllium-Copper:** 3.75-4.25% Be, $40.00 per lb of contained beryllium, with balance as copper at market price on date of shipment, f.o.b. Reading, Pa., or Elmore, O.

**Cobalt:** 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

**Gold:** U. S. Treasury, $35 per ounce.

**Silver:** Open market, New York 85.25c per oz.

**Platinum:** $90-$93 per ounce from refineries.

**Palladium:** $23-$24 per troy ounce.

**Iridium:** $165-$175 per troy ounce.

**Titanium** (sponge form): $5 per pound.

## Rolled, Drawn, Extruded Products

### COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Apr. 1, 1953. Listings are lowest quotations.)

**Sheet:** Copper 50.48; yellow brass 42.87; commercial bronze, 95% 49.89; 90% 48.76; red brass, 85% 47.11; 80% 45.99; best quality, 44.43; nickel silver, 18%, 59.84; phosphor-bronze grade A, 5%, 70.50.

**Rod:** Copper, hot-rolled 46.83; cold-drawn 48.08; yellow brass free cutting, 36.68; commercial bronze 95% 49.58; 90% 48.45; red brass 85%, 46.80; 80%, 45.68.

**Seamless Tubing:** Copper 50.42; yellow brass 45.78; commercial bronze, 90%, 51.32; red brass, 85%, 49.92.

**Wire:** Yellow brass 43.16; commercial bronze, 95%, 50.18; 90%, 49.05; red brass, 85%, 47.40; 80%, 46.28; best quality brass, 44.72.

(Base prices, effective Apr. 1, 1953)

**Copper Wire:** Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 37.46; 30,000 lb lots, 37.58; l.c.l. 38.08. Weatherproof, 100,000 lb, 37.85; 30,000 lb, 38.10; l.c.l., 38.60. Magnet wire del., 15,000 lb or more 43.93; l.c.l., 44.68.

### ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

**Sheets and Circles:** 2s and 3s mill finish c.l.

| Thickness Range Inches | Widths or Diameters, In., Inc. | Flat Sheet Base* | Coiled Sheet Base | Coiled Sheet Circle† Base |
|---|---|---|---|---|
| 0.249-0.136 | 12-48 | 32.9 | ... | ... |
| 0.135-0.096 | 12-48 | 33.4 | ... | ... |
| 0.095-0.077 | 12-48 | 34.1 | 31.8 | 36.3 |
| 0.076-0.061 | 12-48 | 34.7 | 32.0 | 36.5 |
| 0.060-0.048 | 12-48 | 35.0 | 32.2 | 36.8 |
| 0.047-0.038 | 12-48 | 35.5 | 32.6 | 37.1 |
| 0.037-0.030 | 12-48 | 35.9 | 33.0 | 37.8 |
| 0.029-0.024 | 12-48 | 36.5 | 33.3 | 38.3 |
| 0.023-0.019 | 12-36 | 37.1 | 34.0 | 39.0 |
| 0.018-0.017 | 12-36 | 37.9 | 34.6 | 39.9 |
| 0.016-0.015 | 12-36 | 38.8 | 35.4 | 41.1 |
| 0.014 | 12-24 | 39.8 | 36.4 | 42.4 |
| 0.013-0.012 | 12-24 | 40.9 | 37.1 | 43.4 |
| 0.011 | 12-24 | 41.9 | 38.3 | 45.0 |
| 0.010-0.0095 | 12-24 | 43.1 | 39.4 | 46.6 |
| 0.009-0.00855 | 12-24 | 44.3 | 40.7 | 48.5 |
| 0.008-0.0075 | 12-24 | 45.8 | 41.9 | 50.3 |
| 0.007 | 12-18 | 47.3 | 43.4 | 52.6 |
| 0.006 | 12-18 | 48.9 | 44.8 | 57.6 |

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

**Screw Machine Stock:** 5000 lb and over.

| Dia. (in.) or distance across flats | —Round— 17S-T4 | Hexagonal 17S-T4 |
|---|---|---|
| 0.125 | 56.8 | ... |
| 0.156-0.188 | 48.0 | ... |
| 0.219-0.313 | 45.3 | ... |
| 0.375 | 43.7 | 52.4 |
| 0.406 | 43.7 | ... |
| 0.438 | 43.7 | 52.4 |
| 0.469 | 43.7 | ... |
| 0.500 | 43.7 | 52.4 |
| 0.531 | 43.7 | ... |
| 0.563 | 43.7 | 49.2 |
| 0.594 | 43.7 | ... |
| 0.625 | 43.7 | 49.2 |
| 0.688 | 43.7 | 49.2 |
| 0.750-1.000 | 42.6 | 46.4 |
| 1.063 | 42.6 | 44.8 |
| 1.125-1.500 | 41.0 | 44.8 |
| 1.563 | 40.5 | ... |
| 1.625 | 39.8 | 43.2 |
| 1.688-2.000 | 39.8 | ... |

### LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $17.75 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $17.75 per cwt. Traps and bends: List prices plus 30%.

### ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

### "A" NICKEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 86.50c. Strip, cold-rolled 92.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

### MONEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 66.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

### MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 58.00c-65.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

### TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

## Plating Materials

**Chromic Acid:** 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

**Copper Anodes:** Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

**Nickel Anodes:** Rolled, oval, carbonized, carloads 81.00c; 5000 to 20,999 lb, 83.00c; 500 to 4999 lb, 85.00c; 1 to 499 lb, 89.00c, f.o.b. Cleveland.

**Nickel Chloride:** In 100 lb bags, 10,000 lb and over, 37.00c; 5000 to 9900 lb, 38.00c; 400 to 4900 lb, 40.00c; 300 lb, 42.00c; 200 lb, 43.00c; 100 lb, 45.00c, f.o.b. Cleveland.

**Sodium Stannate:** 25 lb cans only, less than 100 lb to consumers $1.10 per lb; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

**Tin Anodes:** Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac. Based on $1.215 tin.

**Zinc Cyanide:** 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

**Stannous Sulphate:** 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

**Stannous Chloride (Anhydrous):** In 400 lb bbl, $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more. Based on $1.215 tin.

## Scrap Metals

### Brass Mill Allowances

(Prices in cents per pound for less than 20,000 pounds, f.o.b. shipping point; on lots over 20,000 pounds at one time, of any or all kinds of scrap, add 1 cent per pound.)

| | Clean Heavy | Rod Ends | Clean Turnings |
|---|---|---|---|
| Copper | 28.625 | 28.625 | 27.875 |
| Yellow Brass | 21.375 | 21.125 | 19.625 |
| Commercial Bronze | | | |
| 95% | 27.250 | 27.000 | 26.500 |
| 90% | 26.125 | 25.875 | 25.375 |
| Red Brass | | | |
| 85% | 25.125 | 24.875 | 24.375 |
| 80% | 24.125 | 23.875 | 23.375 |
| Best Quality(71-80%) | 22.500 | 22.250 | 21.750 |
| Muntz metal | 20.000 | 19.750 | 19.250 |
| Nickel silver, 10% | 25.250 | 25.000 | 12.625 |
| Phos. Bronze, A | 30.625 | 30.375 | 29.375 |
| Naval Brass | 20.000 | 19.750 | 19.250 |
| Manganese Bronze | 20.000 | 19.750 | 19.250 |

### REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 23.00-23.50; No. 2 copper 21.50-22.00; light copper 20.00-20.50; refinery brass (60% copper) per dry copper content 20.00.

### INGOT MAKERS' COPPER AND BRASS SCRAP BUYING PRICES

(Cents per pound, carlots, delivered)

No. 1 copper 22.50-23.50; No. 2 copper, 21.00-22.00; light copper 19.50-20.50; No. 1 composition borings 17.50, nom.; No. 1 composition solids, 18.00, nom.; radiators, 13.50-14.00, nom.; heavy yellow brass solids, 13.50, nom.; yellow brass turnings 11.50-12.50.

### SMELTERS' BUYING PRICES FOR SCRAP ALUMINUM

(Carlots, delivered)

28 aluminum clippings, 15.50-16.50c; mixed clippings, 13.00-14.75c; old aluminum sheet, 13.00-13.50; old aluminum cast, 13.00-13.50c; borings and turnings, 13.00-14.00.

### DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

**Copper and brass:** Heavy copper and wire, No. 1 21.00-22.00; No. 2 19.00; light copper 17.50; No. 1 composition red brass 17.00; No. 1 composition turnings 16.50; mixed brass turnings 10.00; new brass clippings 17.50; No. 1 brass rod turnings 16.00; light brass 10.00; heavy yellow brass 12.50; new brass rod ends 16.50; auto radiators, unsweated 13.00; cocks and faucets 15.00; brass pipe 16.00.

**Aluminum:** Clippings 28 11.50; old sheets 8.00; crankcase 8.00; borings and turnings 5.50; pistons and struts 5.00.

**Tin:** No. 1 pewter 55.00; block tin pipe 80.00; No. 1 babbitt 45.00.

**Lead:** Heavy 9.75-10.25; battery plates 5.05-5.20; linotype and stereotype 11.50-12.00; electrotype 9.75-10.00; mixed babbitt 13.75-14.00.

**Zinc:** Old zinc, 4.50; new die cast scrap, 4.50; old die cast scrap, 3.50.

**Nickel:** Sheets and clips $1.00; rolled anodes $1.00; turnings 85.00; rod ends $1.00.

**Monel:** Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

## DAILY PRICE RECORD

| 1953 | Copper | Lead | Zinc | Tin | Aluminum | Antimony | Nickel | Silver |
|---|---|---|---|---|---|---|---|---|
| May 19-21 | 29.75-30.00 | 12.80 | 11.00 | 100.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 18 | 29.75-30.00 | 12.55 | 11.00 | 99.50 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 15-16 | 29.75-30.00 | 12.30 | 11.00 | 98.50 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 14 | 29.75-30.00 | 12.30 | 11.00 | 98.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 13 | 29.75-30.00 | 12.30 | 11.00 | 97.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 11-12 | 29.75-30.00 | 12.30 | 11.00 | 96.50 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 8-9 | 29.75-30.00 | 12.30 | 11.00 | 99.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 6-7 | 29.50-30.00 | 12.30 | 11.00 | 100.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 5 | 29.50-30.00 | 12.30 | 11.00 | 98.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 4 | 29.50-30.00 | 12.30 | 11.00 | 96.50 | 20.50 | 34.50 | 60.00 | 85.25 |
| May 1-2 | 29.50-30.00 | 12.30 | 11.00 | 93.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| Apr. Avg. | 30.755 | 12.473 | 11.00 | 102.567 | 20.50 | 34.50 | 60.00 | 85.25 |
| Apr. 29-30 | 29.50-30.00 | 12.30 | 11.00 | 95.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| Apr. 28 | 29.75-30.00 | 11.80 | 11.00 | 96.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| Apr. 24-27 | 29.50-30.00 | 11.80 | 11.00 | 94.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| Apr. 23 | 29.50-30.00 | 11.80 | 11.00 | 92.00 | 20.50 | 34.50 | 60.00 | 85.25 |
| Apr. 22 | 30.00 | 11.80 | 11.00 | 93.50 | 20.50 | 34.50 | 60.00 | 85.25 |

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

# The Metal Market

**Strikes won't cause much interruption to supply of nonferrous metals, because reduced demand for metals will inject sobriety into labor maneuvers**

A STRIKELESS summer is in prospect for the metals industry. Contract negotiation, the hardy perennial, is already sprouting and will be in bloom throughout the warm weather period.

The outlook: Scattered uprisings perhaps, but no general walkout. Pattern this year will be substantially different from 1952 when strikes were so fashionable.

**Hinge Is Steel**—Brunt of the bargaining for all industry will again be carried by basic steel. Railroad and coal contracts come up in the fall. Nonferrous mine and fabricator negotiations will await the outcome of steel talks. No difficulty is expected until fall, if then, even though workers may be on the job without a contract for a time.

Nonferrous mining unions want about 15 cents in straight hourly increases, greater sickness and accident benefits, higher shift differentials and overtime premiums, strengthened pensions and retirement clauses, productivity increases. Most of the demands are essentially prebargaining psychological warfare. Mine-Mill is aiming toward an eventual 30-hour work week but it's years away from being a firm demand.

**Unions Aplenty** — Mine contracts start opening about July 1, continuing into autumn. There are about as many unions representing miners as there are mines, which points up the wisdom of letting one contract set the pace. Diversity of union interests and their jockeying for advantage complicates negotiations.

While price increases in copper may tend to inflate union demands, lead-zinc contracts will be up for settlement at the same time. Near-wholesale closings of marginal lead and zinc mines in the West may be a tempering factor. Another incentive to a peaceable get-together will be the lack of zealous determination in government to make tripartite settlement of disputes.

**Near the Top**—Copper companies will have good rebuttal material in statistics. According to data compiled by the late Wage Stabilization Board, postwar increases in hourly pay obtained by copper workers total 81 cents. Aluminum workers have gotten 77 cents, basic steel 78 cents, electrical workers 76 cents, autoworkers and shipbuilders 77 cents, railroaders 93 cents and coal miners $1.01, according to WSB.

The asking price of 15 cents by copper workers is significant. Last year it was 25 cents, and the union finally took 8 cents. This year the magic number will be about a nickel.

**Odds on Aluminum** — Last year, aluminum workers got a healthy increase of 10 per cent plus fringes, the cash increase averaging about 20 cents.

Usually unions take the initiative in opening wage talks. This year may see some of the companies bringing up the subject first. Aluminum producers won't have much leeway in granting wage increases as they haven't yet made up in selling price what they granted last year to workers, and apparently mean business when they say they intend to keep prices down.

**No Market Tension**—Continued production will have an important bearing on price and supply of metals. Last summer when industry's need for metals was more pressing, fear of strike caused protective buying and fabricators took on more metal than conditions normally warrant. Supply of most metals and price of some is definitely easing. With clear labor skies, vacation season approaching, and possibility of less buying strain during the fall production season, fabricators won't be pressured into building up stocks or finding metal to keep up production.

### Comeback

TRADING in copper futures will commence June 1 on the commodity exchange and Aug. 5 on the London metal exchange, the latter for the first time in nearly 14 years.

These markets will provide a sensitive barometer of immediate and future demand for the red metal.

In the United Kingdom, bulk buying by the Ministry of Materials and distribution controls will end too. M.O.M. has nearly 200,000 tons of copper stocked, which could be a strong market lever. Buyers may hold off midsummer orders, not only because of vacations, but to see whether any sharp break occurs in London that would affect U. S. price.

## Lead Price Edges Upward

Lead is in a peculiar position. Production and consumption are high, price is low. Producers decided it was too low last week when daily production was quickly sold and a line of buyers formed at 12.50 cents, New York basis. Testing the market with a quarter-cent boost, sellers found it strong and the next day added another quarter cent, bringing selling price to 13.00. Real and psychological support for the increase stems from the uptrend in London, mine strikes in Mexico which cause loss of about 2000 tons a week, and low inventories in consumers' hands. Lead scrap is growing increasingly scarce and smelting charge for battery plates is dropping. A 14-cent price is about as high as is possible in the near future, say metal men.

## Zinc and Tin Benefit

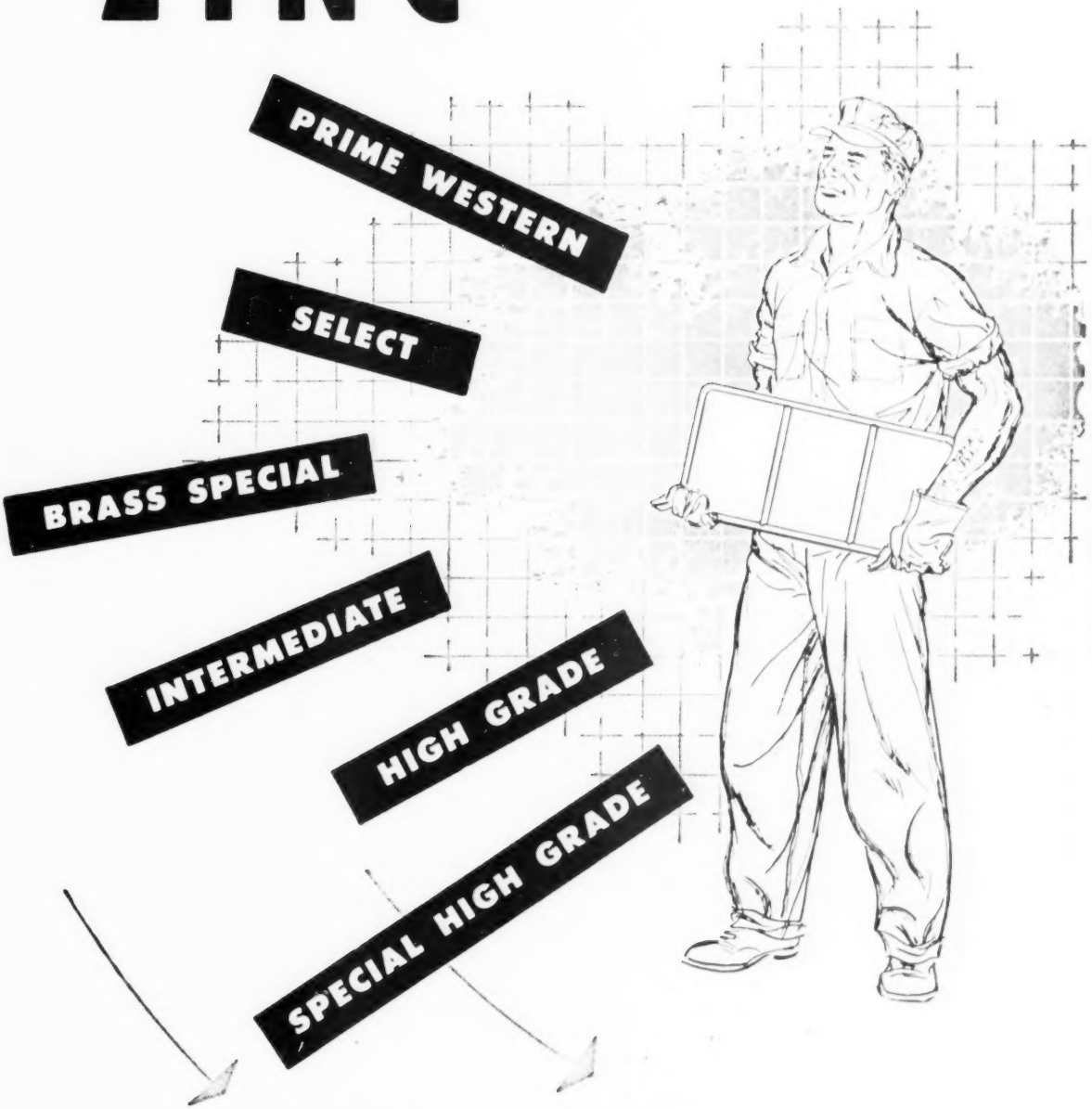
Lead's strengthening had a beneficial effect on zinc and tin. Zinc trading on the commodity exchange hit a '53 high last week, and both prime western and high grade showed sales improvement. General Services Administration is buying good tonnages of high grade at an estimated 1.5 cents below market price. Zinc imports in the first quarter were 49 per cent over 1952's first quarter. Tin price is steady at $1.00 for prompt and only slight concessions for summer delivery, but consumers aren't greatly interested in buying.

## "Stockpiling Won't Hurt"

Aluminum stockpiling won't cut into industry's share of primary production in the third quarter. That's the decision of Arthur S. Flemming, ODM director, who had a committee study the question. Aluminum for civilian consumption will be substantially the same in the third quarter after military and atomic energy setasides. Stockpile metal will come entirely from special production supported by government finances.

# SLAB ZINC

*every grade of ZINC*
*for urgent military and*
*civilian requirements*




**AMERICAN ZINC SALES COMPANY**

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

# Semifinished and Finished Steel Products

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on pages 208-209.

**INGOTS, Carbon, Forging (NT)**
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....54.00
Seattle S24 .....75.00

**INGOTS Alloy (NT)**
Detroit R7 .....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 .....65.00
Midland,Pa. C18 .....57.00
Munhall,Pa. U5 .....57.00

**BILLETS, BLOOMS & SLABS**
**Carbon, Rerolling (NT)**
Bessemer,Pa. U5 ....$59.00
Clairton,Pa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield,Ala. T2 .....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 .....59.00
Johnstown,Pa. B2 .....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 ....59.00
So.Duquesne,Pa. U5 ..59.00

**Carbon, Forging (NT)**
Bessemer,Pa. U5 ....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....78.50
Johnstown,Pa. B2 .....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3, S24 .....89.50
So.Chicago R2,U5,W14..70.50
So.Duquesne,Pa U5 ...70.50
So.SanFrancisco B3 ..89.50

**Alloy, Forging (NT)**
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.60
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....84.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 .....76.00
Lackawanna,N.Y. B2..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....76.00
Munhall,Pa. U5 .....76.00
Seattle S24 .....96.00
So.Chicago R2,U5,W14..76.00
So.Duquesne,Pa. U5 ..76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00

**ROUNDS, SEAMLESS TUBE (NT)**
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R3 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ..87.50

**SHEET BARS (NT)**
Fontana,Calif. K1 ...$93.18

**SKELP**
Aliquippa,Pa. J5 .....3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ...3.55

**WIRE RODS**
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.325
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.325
KansasCity,Mo. S5 ....4.665
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ...4.575
Monessen,Pa. P7 .....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ...4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 .....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ...4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ...5.125
Worcester,Mass. A7 ...4.625

**SHEET STEEL PILING**
Ind.Harbor,Ind. I-2 ...4.675
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 ....4.675

**STRUCTURALS**
**Carbon Steel Stand. Shapes**
AlabamaCity,Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 ....4.50
Gary,Ind. U5 .....3.85
Geneva,Utah C11 .....3.85
Houston S5 .....4.25
Ind.Harbor,Ind. I-2 ...3.85
Johnstown,Pa. B2 .....3.90
KansasCity, Mo. S5 ....4.45
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ...4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....4.95
Seattle B3 .....4.50
So.Chicago,Ill. U5, W14..3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 ....4.10

**Wide Flange**
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....5.05
Lackawanna,N.Y. B2 ..3.90
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

**Alloy Stand. Shapes**
Clairton,Pa U5 .....4.725
Fontana,Calif. K1 .....6.125
Gary,Ind. U5 .....4.725
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 ....4.725

**H.S., L.A. Stand. Shapes**
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa. B2 .....5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....5.80
So.SanFrancisco B3 ...6.30
Struthers,O. Y1 .....6.30

**H.S., L.A. Wide Flange**
Bethlehem,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75

**BEARING PILES**
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

**PLATES,High-Strength Low-Alloy**
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.65
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind.Harbor,Ind. I-2 ...5.95
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 ....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
SparrowsPoint,Md. B2..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

**PLATES, Open-Hearth Alloy**
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ...5.55
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparrowsPoint,Md. B2..5.25

**FLOOR PLATES**
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ..4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 ....4.95

**PLATES, Ingot Iron**
Ashland,c.l. (15) A10 ..4.15
Cleveland,c.l. R2 .....4.50
Warren,O., c.l. R2 ....4.50

**PLATES, Carbon Steel**
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky. (15) A10 ..3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 .....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.35
Ecorse,Mich G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1..4.55
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 .....6.50
Houston S5 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14.3.90
SparrowsPoint,Md. B2 3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 .....4.20
Youngstown R2, U5, Y1.3.90

**PLATES, Carbon A.R.**
Fontana,Calif. K1 .....6.70
Geneva, Utah C11 .....5.05

**PLATES, Wrought Iron**
(Add 4.7% to base, extras)
Economy,Pa. B14 ....8.60

**BARS, Hot-Rolled Carbon**
AlabamaCity,Ala. R2 ..3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill. L1 .....4.50
*Atlanta,Ga. A11 .....4.25*
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Portland,Oreg. O4 .....4.70
Seattle B3, N14, S24 ..4.70
So.ChicagoR2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ...3.95
So.SanFran.,Calif. B3...4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 ....4.10
Youngstown R2, U5 ....3.95

**BAR SHAPES, Hot-Rolled Alloy**
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

**BAR SIZE ANGLES; S. Shapes**
Aliquippa,Pa. J5 .....3.95
*Atlanta A11 .....4.25*
Niles,Calif. P1 .....4.65
SanFrancisco S7 .....5.00

**BAR SIZE ANGLES;H.R.CARBON**
Bethlehem,Pa. B2 .....4.15

**BARS, Hot-Rolled Alloy**
Bethlehem,Pa. B2.....4.675
Buffalo R2 .....4.675
Canton,O. T7 .....4.72
Canton,O. R2 .....4.675
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 ....7.175
Gary,Ind. U5 .....4.675
Houston S5 .....5.075
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 ....4.675
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2..4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.675
So.Chicago R2,U5,W14.4.675
So.Duquesne,Pa. U5 ..4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675

**BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy**
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 .....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 ....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ...5.925
IndianaHarbor,Ind. Y1.6.425
Johnstown,Pa. B2 .....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ..5.925
So.SanFrancisco B3 ...6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925

**BARS, Cold-Finished Carbon**
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12 ....4.925
Buffalo B5 .....4.975
Camden,N.J. P13 .....5.375
Carnegie,Pa. C12 .....4.925
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 .....5.075
Detroit B5 .....5.125
Donora,Pa. A7 .....4.925
Elyria,O W8 .....4.925
FranklinPark,Ill. N5 ..4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 .....4.925
Hammond,Ind L2,M13.4.925
Hartford,Conn. R2 ....5.475
LosAngeles R2 .....6.375
Mansfield,Mass. B5 ....5.475
Massillon,O. R2, R8 ...4.925
Monaca,Pa. S17 .....4.925
Newark,N.J. W18 .....5.375
Plymouth,Mich. P5 ....5.175
Pittsburgh J5 .....4.925
Putnam,Conn. W18 ....5.475
Readville,Mass. C14 ...5.475
St.Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ...4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.925

**BARS, Cold-Finished Alloy**
Ambridge,Pa. W18 .....6.00
BeaverFalls,Pa. M12 ...6.00
Bethlehem,Pa. B12 ....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....6.00
Chicago. B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Detroit B5 .....6.20
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2,M13.6.00
Hartford,Conn. R2 ....6.46
Lackawanna,N.Y. B2 ..6.00
Mansfield,Mass B5 ....6.45
Massillon,O. R2,R8 ....6.00
Midland,Pa. C18 .....6.00
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 ....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 .....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00

**BARS, Reinforcing (Fabricators)**
AlabamaCity,Ala. R2 ....3.95
*Atlanta A11 .....4.25*
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ...3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
SandSprings,Okla. S5 ....4.85
Seattle B3, N14, S24 ..4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa U5 .....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ...3.95
Sterling,Ill. (1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95

**BARS, Reinforcing (Fabricated; to consumers)**
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ....5.25
KansasCity S5 .....6.05
LosAngeles B3 .....5.45
Marion,O P11 .....5.25

## Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel& Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lake Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

Seattle B3 N14 .....5.80
Sand Springs S5 .....6.45
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ..5.25
Williamsport,Pa. S19 ...5.35

**RAIL STEEL BARS**
ChicagoHts.(3,4) C2 ...4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4..4.85
Huntngt.W.Va.(3) W7 ..5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ..5.00
Williamsport(3) S19 ...5.25
Williamsport,Pa. S19 ...5.35

**BARS, Wrought Iron**
(Add 4.4% to base and extras)
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt) L5.14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ..13.00

**SHEETS, Hot-Rolled Steel**
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8)A10 ...3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....3.775
Geneva,Utah C11 ....3.875
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1 3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ..3.775
Munhall,Pa. U5 .....3.775
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ..4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ...3.775
SparrowsPoint,Md. B2.3.775
Steubenville,O. W10 ..3.775
Torrance,Calif. C11 ...4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 ....3.775
WestLeechburg,Pa. A4.3.925
Youngstown U5, Y1 ...3.775

**SHEETS, H.R. (19 gage)**
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.675
Torrance,Calif. C11 ...5.575

**SHEETS, Cold-Rolled**
**High-Strength Low-Alloy**
Cleveland J5, R2 ....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 ....7.975
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1.7.425
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ..6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

**SHEETS, H.R. (14 ga. heavier)**
**High-Strength Low-Alloy**
Cleveland J5, R2 ....5.675
Conshohocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 ....5.675
Fontana,Calif. K1 ....6.775
Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ...5.675
Ind.Harbor,Ind. Y1 ...6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ..5.675
Munhall,Pa. U5 .....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 ....5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175

**SHEETS, Cold-Rolled Steel**
**(Commercial Quality)**
Butler,Pa. A10 .....4.575
Cleveland J5, R2 ....4.575
Ecorse,Mich. G5 .....4.775
Fairfield,Ala. T2 ....4.575
Follansbee,W.Va. F4 ..5.575
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.575
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2,Y1.4.575
Irvin,Pa. U5 .....4.575
Lackawanna,N.Y. B2 ..4.575
Middletown,O. A10 ....4.575
Pittsburg,Calif. C11 ...5.525
Pittsburgh J5 .....4.575
SparrowsPoint,Md. B2..4.575
Steubenville,O. W10 ...4.575
Warren,O. R2 .....4.575
Weirton,W.Va. W6 ....4.575
WestLeechburg,Pa. A4..5.45
Youngstown Y1 .....4.575

**SHEETS, Galv'd No. 10 Steel**
AlabamaCity,Ala. R2 ..5.075
Ashland,Ky.(8) A10 ..5.075
Canton,O. R2 .....5.075
Delphos,O. N16 .....5.675
Dover,O. R1 .....5.775
Fairfield,Ala. T2 .....5.075
Gary,Ind. U5 .....5.075
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2 ...5.075
Irvin,Pa. U5 .....5.075
Kokomo,Ind.(13) C16 ..5.475
MartinsFerry,O. W10 ..5.075
Niles,O. N12 .....6.275
Pittsburg,Calif. C11 ...5.825
SparrowsPoint,Md. B2 .5.075
Steubenville,O. W10 ...5.075
Torrance,Calif. C11 ...5.825
Weirton,W.Va. W6 ....5.075

**SHEETS, Galvanized No. 10,**
**High-Strength Low-Alloy**
Irvin,Pa. U5 .....7.625
SparrowsPoint(39) B2..7.775

**SHEETS, Galvannealed Steel**
Canton,O. R2 .....5.625
Irvin,Pa. U5 .....5.625
Kokomo,Ind.(13) C16 ..6.025
Niles,O. N12 .....6.825

**SHEETS ZINCGRIP STEEL No. 10**
Butler,Pa. A10 .....5.325
Middletown,O. A10 ....5.325

**SHEETS, Electro Galvanized**
Cleveland R2 (28) ....5.925
Niles,O. R2 (28) .....5.925
Weirton,W.Va. W6 ....5.775

**SHEETS, Well Casing**
Fontana,Calif. K1 .....5.34

**BLUED Stock, 29 ga.**
Yorkville,O. W10 .....7.00
Follansbee,W.Va. F4 ...7.10
Follansbee (23) F4 ....6.425

**SHEETS, Enameling Iron**
Ashland,Ky.(8) A10 ..4.925
Cleveland R2 .....4.925
Gary,Ind. U5 .....4.925
GraniteCity,Ill. G4 ....5.625
Ind.Harbor,Ind. I-2 ...4.925
Irvin,Pa. U5 .....4.925
Middletown,O. A10 ....4.925
Youngstown Y1 .....4.925

**BLACK PLATE**
**(Base Box)**
Aliquippa,Pa. J5 .....$6.50
Fairfield,Ala. T2 .....6.60
Gary,Ind. U5 .....6.50
GraniteCity,Ill. G4 ....6.70
Ind.Harbor,Ind. I-2, Y1.6.50
Irvin,Pa. U5 .....6.50
Niles,O. R2 .....6.50
Pittsburg,Calif. C11 ....7.25
SparrowsPoint,Md. B2 ..6.60
Warren,O. R2 .....6.50
Weirton,W.Va. W6 ....6.50
Yorkville,O. W10 .....6.50

**HOLLOWARE ENAMELING**
**Black Plate (29 gage)**
Follansbee,W.Va. F4 ...6.10
Gary,Ind. U5 .....6.10
GraniteCity,Ill. G4 ....6.30
Ind.Harbor,Ind. Y1 ....6.10
Irvin,Pa. U5 .....6.10
Yorkville,O. W10 .....6.35

| **SHEETS, Culvert No. 16** | **Cu Alloy** | **Cu Fe** |
|---|---|---|
| Ashland,Ky. A10 | 5.875 | .... |
| Canton,O. R2 .. | 5.925 | 6.375 |
| Fairfield,Ala. T2 | 5.875 | 6.125 |
| Gary,Ind. U5 ... | 5.875 | 6.125 |
| Ind.Harbor I-2 . | 5.875 | 6.125 |
| Irvin,Pa. U5 ... | 5.875 | 6.125 |
| Kokomo,Ind. C16 | 6.525 | .... |
| MartinsFy.,O.W10 | 5.875 | .... |
| Pittsburg,Cal.C11 | 6.625 | .... |
| SparrowsPt. B2. | 5.875 | .... |
| Torrance,Cal.C11 | 6.625 | .... |

**SHEETS, Culvert, No. 16**
**Pure Iron**
Ashland,Ky. A10 .....6.125
Fairfield,Ala. T2 .....6.125
MartinsFerry,O. W10 ..6.125

**SHEETS, Hot-Rolled Ingot Iron**
**18 Gage and Heavier**
Ashland,Ky.(8) A10 ..4.025
Cleveland R2 .....4.375
Ind.Harbor,Ind. I-2 ...4.025
Warren,O. R2 .....4.375

**SHEETS, Cold-Rolled Ingot Iron**
Butler,Pa. A10 .....5.075
Cleveland R2 .....5.175
Middletown,O. A10 ....5.075
Warren,O. R2 .....5.175

**SHEETS, Galvanized Ingot Iron**
**No. 10 flat**
Ashland,Ky.(8) A10 ...5.325
Canton,O. R2 .....5.825

**SHEETS, ZINCGRIP Ingot Iron**
Butler,Pa. A10 .....5.575
Middletown,O. A10 ....5.575

**SHEETS, ALUMINIZED**
Butler,Pa. A10 .....8.425

**SHEETS, Long Terne, Ingot Iron**
Middletown,O. A10 ....5.875

**MANUFACTURING TERNES**
**(Special Coated)**
Fairfield,Ala. T2 .....$7.85
Gary,Ind. U5 .....7.75
Irvin,Pa. U5 .....7.75
Yorkville,O. W10 .....7.75

**SHEETS, LT. Coated Ternes, 6 lb**
Yorkville,O. W10 ....$8.65

**SHEETS, Mfg. Ternes, 8 lb**
**(Commercial Quality)**
Gary,Ind. U5 .....$9.75
Yorkville,O. W10 .....9.75

**SHEETS, Long Terne Steel**
**(Commercial Quality)**
BeechBottom,W.Va.W10 5.475
Gary,Ind. U5 .....5.475
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....5.475
Niles,O. N12 .....6.275
Weirton,W.Va. W6 ....5.475

**ROOFING SHORT TERNES**
**(8 lb Coated)**
Gary,Ind. U5 .....9.75

| **TIN PLATE, American 1.25 Coke (Base Box)** | **1.50 lb** | **1.50 lb** |
|---|---|---|
| Aliquippa,Pa. J5 | $8.70 | $8.95 |
| Fairfield,Ala. T2. | 8.80 | 9.05 |
| Gary,Ind. U5 .... | 8.70 | 8.95 |
| Ind.Har. I-2, Y1. | 8.70 | 8.95 |
| Irvin,Pa. U5 ... | 8.70 | 8.95 |
| Pitts.,Cal. C11 .. | 9.45 | 9.70 |
| Sp.Pt.,Md. B2 .. | 8.80 | 9.05 |
| Warren,O. R2 .. | 8.70 | .... |
| Weirton,W.Va.W6 | 8.70 | 8.95 |
| Yorkville,O. W10. | 8.70 | 8.95 |

**STRIP, Hot-Rolled**
**High-Strength Low-Alloy**
Bessemer,Ala. T2 .....5.65
Conshohocken,Pa. A3....5.90
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 ....6.75
Gary,Ind. U5 .....5.65
Ind.Harbor,Ind. I-2.....5.65
Ind.Harbor,Ind. Y1 ....6.15
Lackawanna,N.Y. B2 ..5.70
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.65
So.SanFrancisco(25) B3.6.40
SparrowsPoint,Md. B2..5.70
Warren,O. R2 .....5.65
Weirton,W.Va. W6 ....6.10
Youngstown Y1 .....6.15
Youngstown U5 .....5.65

**STRIP, Cold-Rolled**
**High-Strength Low-Alloy**
Cleveland J5 .....7.45
Cleveland A7 .....7.30
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.15
Lackawanna,N.Y. B2 ..7.90
Sharon,Pa. S3 .....7.30
SparrowsPoint,Md. B2 .7.90
Warren,O. R2 .....7.30
Weirton,W.Va. W6 ....7.95
Youngstown Y1 .....7.80

**STRIP, Cold-Rolled Alloy Steel**
Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....11.40
Dover,O. G6 .....11.90
Fontana,Calif. K1 .....13.30
Harrison,N.J. C18 .....12.00
Midland,Pa. C18 .....12.00
NewBrita,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8.12.45
Sharon,Pa. S3 .....12.00
Worcester,Mass. A7 ....11.70
Youngstown C8 .....12.00

**STRIP, Hot-Rolled Ingot Iron**
Ashland,Ky.(8) A10 ..3.975
Warren,O. R2 .....4.325

**STRIP, Cold-Rolled Ingot Iron**
Warren,O. R2 .....5.70

| **TIN PLATE, Electrolytic (Base Box)** | **0.25 lb** | **0.50 lb** | **0.75 lb** |
|---|---|---|---|
| Aliquippa,Pa. J5 ..... | $7.40 | $7.65 | $8.00 |
| Fairfield,Ala. T2 ..... | 7.50 | 7.75 | 8.15 |
| Gary,Ind. U5 ..... | 7.40 | 7.65 | 8.05 |
| GraniteCity,Ill. G4 ..... | 7.60 | 7.85 | 8.25 |
| IndianaHarbor,Ind. I-2, Y1 .... | 7.40 | 7.65 | 8.05 |
| Irvin,Pa. U5 ..... | 7.40 | 7.65 | 8.05 |
| Niles,O. R2 ..... | 7.40 | .... | .... |
| Pittsburg,Calif. C11 ..... | 8.15 | 8.40 | 8.80 |
| SparrowsPoint,Md. B2 ..... | 7.50 | 7.75 | 8.15 |
| Weirton,W.Va. W6 ..... | 7.40 | 7.65 | 8.05 |
| Yorkville,O. W10 ..... | 7.40 | 7.65 | 8.05 |

| **SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower)** | **Field** | **Armature** | **Electric** | **Dyna-Motor** |
|---|---|---|---|---|
| BeechBottom W10 (cut lengths) | ... | ... | 7.65 | 9.10 9.90 |
| Brackenridge,Pa. A4 ..... | ... | ... | 8.35 | 9.60 10.40 |
| GraniteCity,Ill. G4 (cut lengths) | ... | ... | 8.55 | 9.80 .... |
| IndianaHarbor,Ind. I-2 .... | 7.55 | 7.85 | (34) | (41) .... |
| Mansfield,O. E6 (cut lengths) | 7.20 | 7.35 | 7.85 | 9.10 9.90 |
| Newport,Ky. N9 (cut lengths). | ... | 7.35 | 7.85 | 9.10 9.90 |
| Niles,O. N12 (cut lengths) .. | 7.05 | 7.35 | 7.85 | .... .... |
| Vandergrift,Pa. U5 ..... | ... | 7.85 | 8.35 | 9.60 10.40 |
| Warren,O. R2 ..... | 7.55 | 7.85 | 8.35 | 9.60 10.40 |
| Zanesville,O. A10 ..... | ... | 7.85 | 8.35 | 9.60 10.40 |

| **SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower) Transformer Grade** | **72** | **65** | **58** | **52** |
|---|---|---|---|---|
| BeechBottom W10 (cut lengths) | 10.45 | 11.00 | 11.70 | 12.50 |
| Brackenridge,Pa. A4 ..... | 10.95 | .... | .... | .... |
| Newport,Ky. N9 (cut lengths). | 10.45 | .... | .... | .... |
| Vandergrift,Pa. U5 ..... | 10.95 | 11.50 | 12.20 | 13.00 |
| Warren,O. R2 ..... | 10.95 | .... | .... | .... |
| Zanesville,O. A10 ..... | 10.95 | 11.50 | 12.20 | 13.00 |

| **H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)** | **T-100** | **T-90** | **T-80** | **T-73** |
|---|---|---|---|---|
| Butler,Pa. A10 (C.R.) ..... | .... | .... | 15.35 | 15.85 |
| Vandergrift,Pa. U5 ..... | 13.50 | 14.35 | 15.35 | 15.85 |

| **STRIP, Cold-Finished, Spring Steel (Annealed)** | **0.26-0.40C** | **0.41-0.60C** | **0.61-0.80C** | **0.81-1.05C** | **1.06-1.35C** |
|---|---|---|---|---|---|
| Berea,O. C7 ..... | .... | 6.80 | 7.40 | 9.35 | 11.65 |
| Bridgeport,Conn.(10) S15 | 5.80 | 7.65 | 8.25 | 10.20 | 12.50 |
| Bristol,Conn. W1 ..... | .... | .... | 8.55 | 10.50 .... | |
| Carnegie,Pa. S18 ..... | .... | 7.65 | 8.25 | 10.30 | 12.50 |
| Cleveland A7 ..... | 5.10 | 7.30 | 8.25 | 10.20 | 12.50 |
| Dearborn,Mich. D3 .... | 6.05 | 7.90 | 8.50 | .... .... | |
| Detroit D2 ..... | 6.45 | 7.50 | 8.10 | .... .... | |
| Dover,O. G6 ..... | 5.70 | 7.65 | 8.25 | 10.20 | 12.50 |
| FranklinPark,Ill. T6 ... | 5.45 | 7.45 | 8.40 | 10.35 | 12.65 |
| Harrison,N.J. C18 ..... | .... | .... | 8.55 | 10.50 | 12.80 |
| Mattapan,Mass. T6 .... | 5.95 | 7.60 | 8.55 | 10.50 | 12.80 |
| NewBritn.,Conn.(10) S15 | 5.80 | 7.65 | 8.25 | 10.20 | 12.50 |
| NewCastle,Pa. B4 .... | 5.80 | 7.65 | 8.25 | 10.20 .... | |
| NewCastle,Pa. E5 .... | 5.80 | 7.65 | 8.25 | 10.20 | 12.50 |
| NewHaven,Conn. D2 ... | 6.70 | 7.60 | 8.20 | .... .... | |
| NewYork W2 ..... | .... | 7.95 | 8.55 | 10.50 | 12.80 |
| Pawtucket,R.I. N8: Cleve.orPitts Base .... | | 7.65 | 8.25 | 10.20 | 12.50 |
| Worcester,Mass.,Base. | 6.30 | 7.95 | 8.55 | 10.50 | 12.80 |
| Sharon,Pa. S3 ..... | 5.80 | 7.65 | 8.25 | 10.20 | 12.50 |
| Trenton,N.J. R5 ..... | .... | 7.95 | 8.55 | 10.50 | 12.80 |
| Wallingford,Conn. W2.. | 6.30 | 7.60 | 8.20 | 10.15 | 12.65 |
| Warren,O. T5 ..... | 6.20 | 7.65 | 8.26 | 10.20 | 12.50 |
| Weirton,W.Va. W6 .... | 5.80 | 7.65 | 8.25 | 10.20 | 12.50 |
| Worcester,Mass. A7 ... | 5.40 | 7.60 | 8.55 | 10.50 | 12.80 |
| Worcester,Mass. T6 ... | 5.95 | 7.60 | 8.56 | 10.50 | 12.80 |
| Youngstown C8 ..... | .... | 7.65 | 8.25 | 10.20 | 12.50 |
| **Spring Steel (Tempered)** | | | | | |
| Trenton,N.J. R5 (29) .. | .... | .... | 10.30 | 12.60 | 15.35 |
| Harrison,N.J. C18 .... | .... | .... | 10.40 | 12.50 | 15.35 |
| NewYork W3 ..... | .... | .... | 10.50* | 12.50* | 15.35* |
| Youngstown C8 ..... | .... | .... | 10.30 | 12.50 | 15.35 |

* Plus $1.575 per 100 lb.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.-HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O5 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div., Eaton Mfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Div.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.

U4 Universal Cyclops Steel
U5 United States Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

**STRIP, Hot-Rolled Carbon**

| | |
|---|---|
| Ala.City,Ala.(27) R2 | 3.725 |
| Alton,Ill. L1 | 4.20 |
| Ashland,Ky.(8) A10 | 3.725 |
| Atlanta A11 | 4.275 |
| Bessemer,Ala. T2 | 3.725 |
| Bridgeport,Con.(10)S15 | 4.225 |
| Buffalo(27) R2 | 3.725 |
| Butler,Pa. A10 | 3.725 |
| Carnegie,Pa. S18 | 4.225 |
| Conshohocken,Pa. A3 | 4.125 |
| Detroit M1 | 4.40 |
| Ecorse,Mich. G5 | 4.025 |
| Fairfield,Ala. T2 | 3.725 |
| Fontana,Calif. K1 | 5.175 |
| Gary,Ind. U5 | 3.725 |
| Houston,Tex. S5 | 4.125 |
| Ind.Harbor,Ind. I-2,Y1 | 3.725 |
| Johnstown,Pa.(25) B2 | 3.725 |
| KansasCity,Mo.(9) S5 | 4.325 |
| Lackw'na,N.Y.(32) B2 | 3.725 |
| LosAngeles(25) B3 | 4.475 |
| Milton,Pa. B6 | 4.35 |
| Minnequa,Colo. C10 | 4.775 |
| NewBritian(10) S15 | 4.225 |
| N.Tonawanda,N.Y.B11 | 3.725 |
| Pittsburg,Calif. C11 | 4.475 |
| Riverdale,Ill. A1 | 3.725 |
| SanFrancisco S7 | 5.00 |
| Seattle(25) B3 | 4.725 |
| Seattle N14 | 4.725 |
| Sharon,Pa. S3 | 4.225 |
| So.Chicago,Ill. W14 | 3.725 |
| So.SanFrancisco(25) B3 | 4.475 |
| SparrowsPoint,md. B2 | 3.725 |
| Sterling,Ill. N15 | 4.725 |
| Torrance,Calif. C11 | 4.475 |
| Warren,O. R2 | 3.725 |
| Weirton,W.Va. W6 | 3.825 |
| WestLeechburgh,Pa. A4 | 3.925 |
| Youngstown U5, Y1 | 3.725 |

**STRIP, Hot-Rolled Alloy**

| | |
|---|---|
| Bridgeprt.Conn.(10)S15 | 6.05 |
| Carnegie,Pa. S18 | 6.45 |
| Fontana,Calif. K1 | 7.50 |
| Gary,Ind. U5 | 6.10 |
| Houston,Tex. S5 | 6.50 |
| KansasCity, Mo. S5 | 6.70 |
| Midland,Pa. C18 | 5.85 |
| NewBrita.,Conn.(10)S15 | 6.05 |
| Sharon,Pa. S3 | 6.45 |
| Youngstown U5 | 6.10 |

**STRIP, Cold-Rolled Carbon**

| | |
|---|---|
| Anderson,Ind.(40) G6 | 5.50 |
| Bridgeprt.Conn.(10)S15 | 5.80 |
| Butler,Pa. A10 | 5.10 |
| Cleveland A7, J5 | 5.10 |
| Dearborn,Mich. D3 | 6.05 |
| Detroit D2 | 5.60 |
| Detroit M1 | 6.75 |
| Dover,O.(40) G6 | 5.50 |
| Ecorse,Mich. G5 | 5.30 |
| Follansbee,W.Va. F4 | 5.10 |
| Fontana,Calif. K1 | 7.00 |
| FranklinPark,Ill.(40)T6 | 5.35 |
| Ind.Harbor,Ind. I-2 | 5.35 |
| Lackawanna,N.Y. B2 | 5.10 |
| LosAngeles C1 | 7.15 |
| Mattapan,Mass. T6 | 5.95 |
| Middletown,O. A10 | 5.10 |
| NewBritain(10) S15 | 5.80 |
| NewCastle,Pa. B4 | 5.80 |
| NewCastle,Pa.(40) E5 | 5.70 |
| New Haven,Conn. D2 | 5.85 |
| NewHaven,Conn. A7 | 5.60 |
| Pawtucket,R.I. R3 | 6.45 |
| Pawtucket,R.I.(21) N8 | 6.30 |
| Riverdale,Ill.(40) A1 | 5.35 |
| Rome,N.Y. R6 | 5.10 |
| Sharon,Pa. S3 | 5.80 |
| SparrowsPoint,Md. B2 | 5.10 |
| Trenton,N.J. R5 | 6.45 |
| Wallingford,Conn. W2 | 6.30 |
| Warren,O.(40) T5 | 5.70 |
| Warren,O. R2 | 5.10 |
| Weirton,W.Va. W6 | 5.10 |
| Youngstown C8 (40) | 5.70 |
| Youngstown Y1 | 5.10 |

**STRIP, Electro Galvanized**

| | |
|---|---|
| Dover,O. G6 | 5.50 |
| Warren,O. T5 | 5.70 |
| Weirton,W.Va. W6 | 5.10 |
| Youngstown C8 | 5.70 |

**TIGHT COOPERAGE HOOP**

| | |
|---|---|
| Atlanta A11 | 4.45 |
| Riverdale,Ill. A1 | 4.30 |
| Sharon,Pa. S3 | 4.55 |
| Youngstown U5 | 4.15 |

**ROPE WIRE**

| | |
|---|---|
| Alton,Ill. L1 (43) | 8.75 |
| Bartonville,Ill. K4 | 8.95 |
| Buffalo W12 (43) | 8.55 |
| Fostoria,O. S1 (43) | 8.85 |
| Johnstown,Pa. B2 (43) | 8.55 |
| Monessen,Pa. P16 (43) | 8.55 |
| Monessen,Pa. P7 (43) | 8.80 |
| Muncie,Ind. I-7 (43) | 8.75 |
| Palmer,Mass. W12 (43) | 8.85 |
| Portsmouth,O. P12 (43) | 8.85 |
| Roebling,N.J. R5 (43) | 8.85 |
| SparrowsPt, B2 (43) | 8.65 |
| Struthers,O. Y1 (43) | 8.55 |
| Worcester J4, T6 (43) | 8.85 |

(A) Plow and Mild Plow; add 0.25c for improved plow.

**WIRE, Merchant Quality**

| (6 to 8 gage) | An'ld. | Galv. |
|---|---|---|
| AlabamaCity R2 | 6.075 | 6.325 |
| Aliquippa J5 | 6.075 | 6.525‡ |
| Atlanta A11 | 6.325 | 6.675 |
| Bartonville(19)K4 | 6.075 | 6.40 |
| Buffalo W12 | 5.225 | |
| Cleveland A7 | 6.075 | 6.225 |
| CrawfordsvilleM8 | 6.175 | 6.475 |
| Donora,Pa. A7 | 6.075 | 6.225 |
| Duluth,Minn. A7 | 6.075 | 6.225 |
| Fairfield T2 | 6.075 | 6.225 |
| Houston,Tex. S5 | 6.475 | 6.80 |
| Johnstown B2 | 6.075 | 6.45† |
| Joliet,Ill. A7 | 6.075 | 6.225 |
| KansasCy.,Mo. S5 | 6.675 | 7.00 |
| Kokomo C16 | 6.175 | 6.425 |
| LosAngeles B3 | 7.025 | |
| Minnequa C10 | 6.325 | 6.70* |
| Monessen P7 | 6.075 | 6.45 |
| Palmer W12 | 5.525 | |
| Pitts.,Calif. C11 | 7.025 | 7.175 |
| Prtsmth.(18)P12 | 6.475 | |
| Rankin A7 | 6.075 | 6.225 |
| So.Chicago R2 | 6.075 | 6.325 |
| So.S.Fran. C10 | 7.025 | 7.40* |
| SparrowsPt, B2 | 6.175 | 6.55† |
| Sterling,Ill.(1)N15 | 6.375 | 6.925 |
| Struthers,O. Y1 | 6.075 | 6.475 |
| Torrance,Cal. C11 | 7.025 | |
| Worcester A7 | 6.375 | 6.525 |

*Based on 14c zinc; †14.50c zinc; ‡17.5c zinc.

**WIRE (16 gage)** (Add 4.7% on base and extras)

| | Anl'd. Stone | Galv. Stone |
|---|---|---|
| Aliquippa J5 | 10.15 | 12.15 |
| Bartonville(19)K4 | 10.25 | 12.00* |
| Cleveland A7 | 10.25 | 11.55 |
| Crawfrdsville M8 | 10.73 | 12.51 |
| Fostoria,O. S1 | 10.40 | 13.00 |
| Johnstown B2 | 10.73 | 12.58§ |
| Kokomo C16 | 10.62§† | 12.32§† |
| Minnequa C10 | 10.40 | 12.42§* |
| Palmer,Mass. W12 | 10.25 | 12.15 |
| Pitts.,Cal. C11 | 10.60 | 11.90 |
| SparrowsPt, B2 | 10.84 | 12.68§ |
| Sterling(1) N15 | 10.73‡ | 12.15† |
| Waukegan A7 | 10.25 | 11.55 |
| Worcester A7 | | 11.85 |

*Based on 14c zinc; §14.50c zinc. †Includes 4.7% increase.

**WIRE, Manufacturers Bright, Low Carbon**

| | |
|---|---|
| AlabamaCity,Ala. R2 | 5.225 |
| Aliquippa,Pa. J5 (42) | 4.85 |
| Atlanta A11 | 5.475 |
| Alton,Ill. L1 | 5.45 |
| Bartonville,Ill. K4 | 5.325 |
| Buffalo W12 | 5.225 |
| Chicago W13 | 5.475 |
| Cleveland A7, C20 | 5.225 |
| Crawfordsville,Ind. M8 | 5.325 |
| Donora,Pa. A7 | 5.225 |
| Duluth,Minn. A7 | 5.225 |
| Fairfield,Ala. T2 | 5.225 |
| Fostoria,O. (24) S1 | 5.725 |
| Houston S5 | 5.625 |
| Johnstown,Pa. B2 | 5.225 |
| Joliet,Ill. A7 | 5.225 |
| KansasCity,Mo. S5 | 5.825 |
| Kokomo,Ind. C16 | 5.325 |
| LosAngeles B3 | 6.175 |
| Minnequa,Colo. C10 | 5.475 |
| Monessen,Pa. P7 | 5.475 |
| Newark 6-8 ga I-1 | 5.88 |
| No.Tonawanda B11 | 5.225 |
| Palmer,Mass. W12 | 5.525 |
| Pittsburg,Calif. C11 | 6.175 |
| Portsmouth,O. P12 | 5.625 |
| Rankin,Pa. A7 | 5.225 |
| So.Chicago,Ill. R2 | 5.225 |
| So.SanFrancisco C10 | 6.175 |
| SparrowsPoint,Md. B2 | 5.325 |
| Sterling,Ill.(1) N15 | 5.225 |
| Struthers,O. Y1 | 5.225 |
| Torrance,Calif. C11 | 6.175 |
| Waukegan,Ill. A7 | 5.225 |
| Worcester,Mass. A7 | 5.525 |

**WIRE, Cold-Rolled Flat**

| | |
|---|---|
| Anderson,Ind. G6 | 6.20 |
| Buffalo W12 (43) | 6.35 |
| Cleveland A7 (43) | 5.85 |
| Crawf'sville Ind.M8(43) | 5.70 |
| Dover,O. G6 | 6.20 |
| Fostoria,O. S1 (43) | 6.00 |
| Kokomo,Ind. C16 (43) | 5.70 |
| FranklinPark,Ill. T6(43) | 6.20 |
| Massillon,O. R8 (43) | 5.85 |
| Monessen,Pa. P16 (43) | 6.35 |
| Monessen,Pa. P7 (43) | 6.10 |
| Pawtkt.R.I.(12) N8 (43) | 6.85 |
| Trenton,N.J. R5 (43) | 6.15 |
| Worcester,Mass.A7 (43) | 6.15 |
| Worcester,Mass. T6 (43) | 6.50 |
| Worcester,Mass.W12(43) | 6.65 |

**WIRE, Galv'd ACSR for Cores**

| | |
|---|---|
| Bartonville,Ill. K4 | 8.90 |
| Monessen,Pa. P16 (43) | 8.50 |
| Muncie,Ind. I-7 (43) | 8.70 |
| Roebling,N.J. R5 (43) | 8.80 |
| SparrowsPt.,Md. B2(43) | 8.60 |
| Johnstown,Pa. B2 (43) | 8.50 |

**WIRE, MB Spring, High Carbon**

| | |
|---|---|
| Aliquippa,Pa. J5 (43) | 6.25 |
| Alton,Ill. L1 (43) | 6.55 |
| Bartonville,Ill. K4 | 6.64 |
| Buffalo W12 (43) | 6.25 |
| Cleveland A7 (43) | 6.25 |
| Donora,Pa. A7 (43) | 6.25 |
| Duluth,Minn. A7 (43) | 6.25 |
| Fostoria,O. S1 (43) | 6.25 |
| Johnstown,Pa. B2 (43) | 6.25 |
| Millbury(12) N6 (43) | 8.05 |
| Minnequa,Colo. C10(43) | 6.50 |
| Monessen,Pa. P7 (43) | 6.25 |
| Monessen,Pa. P16 | 6.75 |
| Muncie,Ind. I-7 (43) | 6.45 |
| Palmer,Mass W12 (43) | 6.55 |
| Pittsburg,Calif. C11(43) | 7.20 |
| Roebling,N.J. R5 (43) | 6.55 |
| Portsmouth,O. P12(43) | 6.25 |
| So.Chicago,Ill. R2 (43) | 6.25 |
| So.SanFran. C10 (43) | 7.20 |
| SparrowsPt.,Md. B2 (43) | 6.35 |
| Struthers,O. Y1 (43) | 6.25 |
| Trenton,N.J. A7 (43) | 6.55 |
| Waukegan,Ill. A7 (43) | 6.25 |
| Worcester A7, T6 (43) | 6.55 |
| Worcester,Mass. W12(43) | 6.55 |
| Worcester,Mass. J4 (43) | 6.75 |

**Wire Upholstery Spring**

| | |
|---|---|
| Aliquippa,Pa. J5 | 6.275 |
| Alton,Ill. L1 | 6.50 |
| Buffalo W12 | 6.275 |
| Cleveland A7 | 6.275 |
| Donora,Pa. A7 | 6.275 |
| Duluth,Minn. A7 | 6.275 |
| Johnstown,Pa. B2 | 6.275 |
| LosAngeles B3 | 7.225 |
| Minnequa,Colo. C10 | 6.525 |
| Monessen,Pa. P7 | 6.275 |
| Monessen,Pa. P16(42) | 6.40 |
| NewHaven,Conn. A7 | 6.575 |
| Palmer,Mass. W12 | 6.575 |
| Pittsburg,Calif. C11 | 7.225 |
| Portsmouth,O. P12 | 6.275 |
| Roebling,N.J. R5 | 6.575 |
| So.Chicago,Ill. R2 | 6.275 |
| So.SanFrancisco C10 | 7.225 |
| SparrowsPoint,Md. B2 | 6.375 |
| Torrance,Calif. C11 | 7.225 |
| Trenton,N.J. A7 | 6.575 |
| Waukegan,Ill. A7 | 6.275 |
| Worcester,Mass. A7 | 6.575 |

**WIRE, Fine & Weaving (8"Coils)**

| | |
|---|---|
| Alton,Ill. L1 (43) | 9.20 |
| Bartonville,Ill. K4 | 9.42 |
| Buffalo W12 (43) | 8.90 |
| Chicago W13 | 9.32 |
| Cleveland A7 (43) | 8.90 |
| Crawf'sville,Ind. M8(43) | 8.90 |
| Fostoria,O. S1 (43) | 8.90 |
| Johnstown,Pa. B2 (43) | 8.90 |
| Kokomo,Ind. C16 (43) | 8.90 |
| Monessen,Pa. P16 (43) | 8.90 |
| Muncie,Ind. I-7 (43) | 9.10 |
| Palmer,Mass. W12 (43) | 9.20 |
| Roebling,N.J. R5 (43) | 9.20 |
| Waukegan,Ill. A7 (43) | 8.90 |
| Worcstr.Mass. A7,T6(43) | 9.20 |

**WIRE, Tire Bead**

| | |
|---|---|
| Bartonville,Ill. K4 | 11.51 |
| Monessen,Pa. P16 (43) | 11.40 |
| Roebling,N.J. R5 (43) | 11.55 |

**WOVEN FENCE, 9-15½ Ga. Col.**

| | |
|---|---|
| AlabamaCity,Ala R2 | 135 |
| Ala.City,Ala.,14-18ga.R2 | 222 |
| Aliqu'pa,Pa.9-14½ga.J5 | 139‡ |
| Atlanta A11 | 140 |
| Bartonville,Ill.(19) K4 | 137 |
| Crawfordsville,Ind. M8 | 138 |
| Donora,Pa. A7 | 133 |
| Duluth,Minn. A7 | 133 |
| Fairfield,Ala. T2 | 133 |
| Houston,Tex. S5 | 145 |
| Johnstown,Pa. B2 | 138 |
| Johnstown 17ga.,6" B2 | 229 |
| Joliet,Ill. A7 | 133 |
| KansasCity,Mo. S5 | 149 |
| Kokomo,Ind. C16 | 140 |
| Minnequa,Colo. C10 | 146* |
| Monessen,Pa. P7 | 138 |
| Pittsburg,Calif. C11 | 156 |
| Rankin,Pa. A7 | 133 |
| So.Chicago,Ill. R2 | 135 |
| Sterling,Ill. (1) N15 | 136 |

*On 14c zinc; ‡17.5c zinc.

**FENCE POSTS**

| | Col. |
|---|---|
| ChicagoHts.,Ill. C2 | 140 |
| Duluth,Minn, A7 | 133 |
| Franklin,Pa. F5 | 140 |
| Huntington,W.VA. W7 | 148 |
| Johnstown,Pa. B2 | 148 |
| Marion,O. P11 | 140 |
| Minnequa,Colo. C10 | 138 |
| Moline,Ill. R2 | 136 |
| So.Chicago,Ill. R2 | 140 |
| Tonawanda,N.Y. B12 | 148 |
| Williamsport,Pa. S19 | 158 |

**Wire, Barbed**

| | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 144 |
| Aliquippa,Pa. J5 | 148‡ |
| Atlanta A11 | 149 |
| Bartonville,Ill.(19) K4 | 146 |
| Crawfordsville,Ind M8 | 147 |
| Donora,Pa. A7 | 142 |
| Duluth,Minn. A7 | 142 |
| Fairfield,Ala. T2 | 142 |
| Houston,Tex. S5 | 154 |
| Johnstown,Pa. B2 | 145 |
| Joliet,Ill. A7 | 142 |
| KansasCity,Mo. S5 | 158 |
| Kokomo,Ind. C16 | 149 |
| Minnequa,Colo. C10 | 153* |
| Monessen,Pa. P7 | 147 |
| Pittsburg,Calif. C11 | 162 |
| Rankin,Pa. A7 | 142 |
| So.Chicago,Ill. R2 | 144 |
| So.SanFran.,Calif. C10 | 167* |
| SparrowsPoint,Md. B2 | 147 |
| Sterling,Ill.(1) N15 | 145 |

*On 14c zinc; ‡17.5c zinc.

**BALE TIES, Single Loop**

| | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 132 |
| Atlanta A11 | 135 |
| Bartonville,Ill.(19) K4 | 132 |
| Crawfordsville,Ind. M8 | 132 |
| Donora,Pa. A7 | 132 |
| Duluth,Minn. A7 | 132 |
| Fairfield,Ala. T2 | 132 |
| Joliet,Ill. A7 | 132 |
| KansasCity,Mo. S5 | 144 |
| Kokomo,Ind. C16 | 134 |
| Minnequa,Colo. C10 | 137 |
| Pittsburg,Calif. C11 | 156 |
| So.Chicago,Ill. R2 | 132 |
| So.SanFran.,Calif. C10 | 156 |
| SparrowsPoint,Md. B2 | 134 |
| Sterling,Ill.(1) N15 | 132 |

**NAILS, Stock**

| To dealers & mfrs. (7) | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 127 |
| Aliquippa,Pa. J5 | 127 |
| Atlanta A11 | 130 |
| Bartonville,Ill. (19) K4 | 127 |
| Chicago,Ill. W13 | 127 |
| Cleveland A9 (44) | 125 |
| Crawfordsville,Ind. M8 | 127 |
| Donora,Pa. A7 | 127 |
| Duluth,Minn A7 | 127 |
| Fairfield,Ala. T2 | 127 |
| Galveston,Tex. D7 | 135 |
| Houston,Tex. S5 | 135 |
| Johnstown,Pa. B2 | 127 |
| Joliet,Ill. A7 | 127 |
| KansasCity,Mo. S5 | 139 |
| Kokomo,Ind. C16 | 129 |
| Minnequa,Colo. C10 (44) | 123 |
| Monessen,Pa. P7 | 127 |
| Pittsburg,Calif. C11 | 146 |
| Portsmouth,O. P12 | 132 |
| Rankin,Pa. A7 | 127 |
| So.Chicago,Ill. R2 | 127 |
| SparrowsPt, Md. B2 | 129 |
| Sterling,Ill. (1) N15 | 127 |
| Torrance,Calif. C11 | 147 |
| Worcester,Mass. A7 | 133 |

**NAILS, Cut (100 lb keg.) to dealers (33)**

| | |
|---|---|
| Conshohocken,Pa. A3 | $7.80 |
| Wheeling,W.Va. W10 | 7.80 |

**STAPLES, Polished, Stock**

| To dealers & mfrs. (7) | Col. |
|---|---|
| AlabamaCity,Ala. R2 | 126 |
| Aliquippa,Pa. J5 | 126 |
| Atlanta A11 | 129 |
| Bartonville,Ill. (19) K4 | 126 |
| Chicago W13 | 127 |
| Crawfordsville,Ind. M8 | 128 |
| Donora,Pa. A7 | 126 |
| Duluth,Minn. A7 | 126 |
| Fairfield,Ala. T2 | 126 |
| Johnstown,Pa. B2 | 126 |
| Joliet,Ill. A7 | 126 |
| Kokomo,Ind. C16 | 128 |
| Minnequa,Colo. C10 (45) | 123 |
| Monessen,Pa. P7 | 127 |
| Pittsburg,Calif. C11 | 145 |
| Portsmouth,O. P12 | 132 |
| Rankin,Pa. A7 | 126 |
| So.Chicago,Ill. R2 | 126 |
| SparrowsPt,Md. B2 | 128 |
| Sterling,Ill. (1) N15 | 126 |
| Torrance,Calif. C11 | 146 |
| Worcester,Mass. A7 | 132 |

**TRACK BOLTS (20) Treated**

| | |
|---|---|
| KansasCity,Mo. S5(46) | 9.85 |
| Lebanon,Pa. (31) B2 | 9.85 |
| Minnequa,Colo. C10 | 9.85 |
| Pittsburgh P14 | 9.85 |
| Pittsburgh O3 | 10.60 |

**AXLES**

| | |
|---|---|
| Ind.Harbor,Ind. S13 | 5.65 |
| Johnstown,Pa. B2 | 5.65 |

**TIE PLATES**

| | |
|---|---|
| Fairfield,Ala. T2 | 4.925 |
| Gary,Ind. U5 | 4.925 |
| Ind.Harbor,Ind. I-2 | 4.925 |
| *Lackawanna,N.Y. B2* | *4.925* |
| Minnequa,Colo. C10 | 4.925 |
| Pittsburg,Calif. C11 | 5.075 |
| Seattle B3 | 5.075 |
| *Steelton,Pa. B2* | *4.925* |
| Torrance,Calif. C11 | 5.075 |

**JOINT BARS**

| | |
|---|---|
| Bessemer,Pa. U5 | 5.075 |
| Fairfield,Ala. T2 | 5.075 |
| Ind.Harbor,Ind. I-2 | 5.075 |
| Joliet,Ill. U5 | 5.075 |
| *Lackawanna,N.Y. B2* | *5.075* |
| Minnequa,Colo. C10 | 5.075 |
| *Steelton,Pa. B2* | *5.075* |

**STANDARD TRACK SPIKES**

| | |
|---|---|
| Ind.Harbor,Ind. I-2 | 6.80 |
| Ind.Harbor,Ind. Y1 | 6.65 |
| KansasCity,Mo. S5 | 6.90 |
| Lebanon,Pa. B2 | 6.65 |
| Minnequa,Colo. C10 | 6.80 |
| Pittsburgh J5 | 6.65 |
| Seattle B3 | 7.15 |
| So.Chicago,Ill. R2 | 6.65 |
| Struthers,O. Y1 | 6.65 |
| Youngstown R2 | 6.65 |

| RAILS | Std. No. 1 | Std. No. 2 | Std. Tee Rails All No. 2 | 60 lb Und- |
|---|---|---|---|---|
| Bessemer,Pa. U5 | 4.075 | 3.975 | 4.025 | 5.00 |
| Ensley,Ala. T2 | 4.075 | 3.975 | ..... | 5.00 |
| Fairfield,Ala. T2 | ..... | ..... | ..... | 5.00 |
| Gary,Ind. U5 | 4.075 | 3.975 | 4.025 | ..... |
| Huntington,W.Va. W7 | ..... | ..... | ..... | 5.25 |
| IndianaHarbor,Ind. I-2 | 4.075 | 3.975 | 4.025 | ..... |
| *Johnstown,Pa. B2* | | | *(16)* | *5.00* |
| *Lackawanna,N.Y. B2* | *4.075* | *3.975* | | *4.55* |
| *Minnequa,Colo. C10* | *$81.50** | *$79.50** | | *5.05* |
| *Steelton,Pa. B2* | *4.075* | *3.975* | | |
| Williamsport,Pa. S19 | ..... | ..... | | 5.00 |

*Per net ton.

## TOOL STEEL

(Prices subject to 4.7% increase)

| Grade | $ per lb |
|---|---|
| Regular Carbon | 0.230 |
| Extra Carbon | 0.270 |
| Special Carbon | 0.325 |
| Oil Hardening | 0.350 |
| 5% Cr Hot Work | 0.350 |
| Hi-Carbon-Cr | 0.635 |

**Grade by Analysis**

| W | Cr | V | Co | |
|---|---|---|---|---|
| 18 | 4 | 1 | .... | 1.505 |
| 18 | 4 | 2 | .... | 1.65-1.66 |
| 20.25 | 4.25 | 1.6 | 12.25 | 3.535-3.675 |
| 19 | 4 | 2 | 7 | 2.460 |
| 18.25 | 4.25 | 1 | 4.75 | 2.125 |
| 18 | 4 | 2 | 9 | 2.445-2.45 |
| 13.5 | 4 | 3 | .... | 1.6025 |
| 9 | 3.25 | 0.5 | .... | 1.01 |

| W | Cr | V | Mo | |
|---|---|---|---|---|
| 6.4 | 4.5 | 1.9 | 5 | 0.96-0.965 |
| 6 | 4 | 3 | 6 | 1.190 |
| 1.5 | 4 | 1 | 8.5 | 0.810 |

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

**FOOTNOTES**

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base
(12) Worcester, Mass. base
(13) Add 0.50c for 17 Ga & heavier
(15) ⅛" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.05c
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c
(34) 7.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.055"; 0.055" and heavier, 0.25c higher.
(41) 0.10c for cut lengths
(43) Plus 0.375c per 100 lb
(44) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.
(46) Plus 2.2 per cent.

## BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

| Size—Inches | ½ | | ¾ | | 1 | | 1¼ | | 1½ | | 2 | | 2½ | | 3 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft. | 8.5c | | 11.5c | | 17c | | 23c | | 27.5c | | 37c | | 58.5c | | 76.5c | |
| Pounds Per Ft. | 0.85 | | 1.13 | | 1.68 | | 2.28 | | 2.73 | | 3.68 | | 5.82 | | 7.62 | |
| | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv |
| Aliquippa, Pa. J5 (††) | 28.75 | 12.50 | 31.75 | 16.50 | 34.25 | 20 | 36.75 | 21 | 37.25 | 22 | 37.75 | 22.50 | 39.25 | 22.50 | 39.25 | 22.50 |
| Alton, Ill. L1 (†) | 29.5 | 10.5 | 32.5 | 14.5 | 35 | 18 | 35.5 | 18.5 | 36 | 19.5 | 36.5 | 20 | 37 | 20.5 | 37 | 20.5 |
| Benwood, W. Va. W10 | 32.5 | 13.25 | 35.5 | 17.25 | 38 | 20.75 | 38.5 | 20.5 | 39 | 21.5 | 39.5 | 22 | 40 | 21.75 | 40 | 21.75 |
| Etna, Pa. N2 (†) | 28.75 | 9.50 | 31.75 | 13.50 | 34.25 | 17 | 36.75 | 18.75 | 37.25 | 19.75 | 37.75 | 20.25 | 39.25 | 21 | 39.25 | 21 |
| Fontana, Calif. K1 (†) | 19.5 | 0.25 | 22.5 | 4.25 | 25 | 7.75 | 25.5 | 7.5 | 26 | 8.5 | 26.5 | 9 | 27 | 8.75 | 27 | 8.75 |
| Ind. Harbor, Ind. Y1 (††) | 31.5 | 14.25 | 34.5 | 18.25 | 37 | 21.75 | 37.5 | 21 | 38 | 22 | 38.5 | 22.25 | 39 | 21.75 | 39 | 21.75 |
| Lorain, O. N3 (*) | 28.75 | 18.50 | 31.75 | 22.50 | 34.25 | 26 | 36.75 | 25.50 | 37.25 | 26.50 | 37.75 | 27 | 39.25 | 25.50 | 39.25 | 25.50 |
| Sharon, Pa. M6 | 32.5 | 16.25 | 35.5 | 20.25 | 38 | 23.75 | 38.5 | 22.75 | 39 | 23.75 | 39.5 | 24.25 | 40 | 23.25 | 40 | 23.25 |
| Sparrows Pt., Md. B2 | 30.5 | 11.25 | 33.5 | 15.25 | 36 | 18.75 | 36.5 | 18.5 | 37 | 19.5 | 37.5 | 20 | 38 | 19.75 | 38 | 19.75 |
| Youngstown R2 (**) | 32.5 | 16.25 | 35.5 | 20.25 | 38 | 23.75 | 38.5 | 22.75 | 39 | 23.75 | 39.5 | 24.25 | 40 | 23.25 | 40 | 23.25 |
| Youngstown Y1 (‡) | 32.5 | 15.25 | 35.5 | 19.25 | 38 | 22.75 | 38.5 | 22.00 | 39 | 23.00 | 39.5 | 23.50 | 40 | 22.75 | 40 | 22.75 |
| Wheatland, Pa. W9 | 32.5 | 13.25 | 35.5 | 16.25 | 38 | 18.75 | 38.5 | 19 | 39 | 19.5 | 39.5 | 20 | 40 | 20.25 | 40 | 20.25 |

## SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

| Size—Inches | 2 | | 2½ | | 3 | | 3½ | | 4 | | 5 | | 6 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 37c | | 58.5c | | 76.5c | | 92c | | $1.09 | | $1.48 | | $1.92 | |
| Pounds Per Ft | 3.68 | | 5.82 | | 7.62 | | 9.20 | | 10.89 | | 14.81 | | 19.18 | |
| | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv |
| Aliquippa, Pa. J5 (††) | 18.25 | 2.5 | 22.25 | 5 | 24.75 | 7.50 | 26.25 | 9 | 26.25 | 9 | 26.00 | 8.75 | 28.50 | 11.25 |
| Ambridge, Pa. N2 (†) | 18.25 | .... | 22.25 | .... | 24.75 | .... | 26.25 | .... | 26.25 | .... | 26.00 | .... | 28.50 | .... |
| Lorain, O. N3 (*) | 18.25 | 7 | 22.25 | 8 | 24.75 | 10.50 | 26.25 | 12 | 26.25 | 12 | 26.00 | 11.75 | 28.50 | 14.25 |
| Youngstown Y1 (‡) | 24 | 7.50 | 27 | 9.25 | 27 | 9.25 | 29 | 11.25 | 29 | 11.25 | 33.75 | 16 | 33.75 | 16 |

## ELECTRIC WELD STANDARD PIPE, T & C

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Youngstown, R2 (**) | 24 | 8.25 | 27 | 9.75 | 27 | 9.75 | 29 | 11.75 | 29 | 11.75 | 33.75 | 16.5 | 33.75 | 16.5 |

## BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

| Size—Inches | ⅛ | | ¼ | | ⅜ | | 3½ | | 4 | |
|---|---|---|---|---|---|---|---|---|---|---|
| List Per Ft | 5.5c | | 6c | | 6c | | 92c | | $1.09 | |
| Pounds Per Ft | 0.24 | | 0.42 | | 0.57 | | 9.20 | | 10.89 | |
| | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv | Blk | Galv |
| Benwood, W. Va. W10 | 29.5 | +0.25 | 23.25 | +3.5 | 17.75 | +7.75 | 33 | 14.25 | 33 | 14.25 |
| Butler, Pa. F6 (†) | 30.5 | 1.25 | 25 | +1.75 | 20 | +5.5 | .. | .... | .. | .... |
| Etna, Pa. N2 (†) | 28 | +1.25 | 22 | +4.75 | 16 | +9.50 | 30.25 | 11.50 | 30.25 | 11.50 |
| Sharon, Pa. M6 (‡) | 29.5 | —1.75 | 23 | +2.25 | 18 | +5.25 | .. | .... | .. | .... |
| Sharon, Pa. S4 (†) | 30.5 | 1.25 | 25 | +1.75 | 20 | +5.5 | .. | .... | .. | .... |
| Sparrows Pt., Md. B2 | 28.5 | +0.75 | 23 | +3.75 | 18 | +7.50 | .. | .... | .. | .... |
| Youngstown R2 (**) | .. | .... | .. | .... | .. | .... | 33 | 15.75 | 33 | 15.75 |
| Wheatland, Pa. W9 | 28.5 | +0.75 | 23 | +3.75 | 18 | +7.50 | .. | .... | .. | .... |

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; (**), 11.50c; (*), 5c; (††), 11c; with discounts adjusted depending on price of zinc at time of shipment.

## BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

| O.D. In. | B.W. Gage | Seamless H.R. | Seamless C.D. | Elec. Weld H.R. | Elec. Weld C.D. |
|---|---|---|---|---|---|
| 1 | 13 | 14.19 | 16.71-17.77 | 16.20 | 16.20 |
| 1¼ | 13 | 16.97 | 19.86-21.26 | 16.46 | 19.19 |
| 1½ | 13 | 18.22-18.77 | 22.08-22.82 | 18.19 | 21.41 |
| 1¾ | 13 | 20.35-21.35 | 24.92-25.49 | 20.69 | 24.35 |
| 2 | 13 | 22.81-23.93 | 27.94-28.58 | 23.19 | 27.28 |
| 2¼ | 13 | 25.69-26.66 | 31.38-32.18 | 25.84 | 30.42 |
| 2½ | 12 | 28.40-29.36 | 34.55-35.58 | 28.46 | 33.50 |
| 2½ | 12 | 31.28-32.17 | 37.83-39.19 | 31.19 | 36.67 |
| 2¾ | 12 | 33.87-34.82 | 40.09-42.44 | 33.65 | 38.86 |
| 3 | 12 | 35.78-36.87 | 42.11-44.93 | 34.98 | 40.82 |

## BOLTS, NUTS

### CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

| | |
|---|---|
| ½-in. & smaller diam. | 11 |
| ⅝-in. & ¾-in. | 15 |
| ⅞-in. and larger | 14 |
| Longer than 6 in.: | |
| All diams. | 8 |
| Lag bolts, all diams.: | |
| 6 in. and shorter | 19 |
| over 6 in. long | 16 |
| Ribbed Necked Carriage | 15 |
| Blank | 30 |
| Plow | 30 |
| Step, Elevator, Tap and Sleigh Shoe | 18 |
| Tire Bolts | 8 |
| Boiler & Fitting-Up Bolts | 28 |

### NUTS

| | Reg. | Hvy. |
|---|---|---|
| Square: | | |
| ½-in. & smaller | 10 | 10 |
| ⅝-in. & ¾-in. | 8 | 1 |
| ⅞-in.-1½-in. | 4 | +4 |
| 1⅝-in. & larger | 22 | 1 |
| H.P. Hex.: | | |
| ½-in. & smaller | 12 | +3 |
| ⅝-in. & ¾-in. | 8 | +3 |
| ⅞-in.-1½-in. | 4 | +3 |
| 1⅝-in. & larger | 4 | +3 |
| C.P. Hex.: | | |
| ½-in. & smaller | 22 | 18 |
| ⅝-in. & ¾-in. | 19 | 13 |
| ⅞-in. & 1½-in. | 15 | 8 |
| 1⅝-in. & larger | 2 | +4 |

### SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

| | Reg. | Hvy. |
|---|---|---|
| ½-in. & smaller | 33 | 26 |
| ⅝-in. & ¾-in. | 27 | 19 |
| ⅞-in.-1½-in. | 21 | 11 |
| 1⅝-in. & larger | 5 | list |
| | Light | |
| ⅞-in. & smaller | 33 | |
| ½-in. to ⅝-in. | 26 | |
| ¾-in. to 1½-in. | 18 | |

### SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

| | |
|---|---|
| 1 in. diam x 6 in. and shorter | 37 |
| 1 in. and smaller diam. x over 6 in. | 24 |

### HEADLESS SET SCREWS

(Packaged; per cent off list)

| | |
|---|---|
| No. 10 and smaller | 34 |
| ¼-in. diam & larger | 14 |
| N.F. thread, all diams. | 8 |

### STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

| | |
|---|---|
| Plain finish | 47.5 & 10 |
| Plated finishes | 30 & 10 |

### HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

| | |
|---|---|
| 6 in. or shorter: | |
| ⅝-in. & smaller | 40 |
| ¾-in. through 1 in. | 26 |
| Longer than 6 in.: | |
| ⅝-in. and smaller | 24 |
| ¾-in. through 1 in. | 2 |

## RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 8.50c

⅞-in. under ..... 40 off

## ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

### GRAPHITE

| Inches Diam. | Length | Cents per lb |
|---|---|---|
| 17,18,20 | 60,72 | 17.85 |
| 8 to 16 | 48,60,72 | 17.85 |
| 7 | 48,60 | 19.57 |
| 6 | 48,60 | 20.95 |

### CARBON

| | | |
|---|---|---|
| 35,40 | 110 | 8.03 |
| 30 | 65,84,110 | 8.03 |
| 24 | 72 to 104 | 8.03 |
| 17 to 20 | 34,90 | 8.03 |

## METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

| | |
|---|---|
| Sponge iron: | Cents |
| 98+ % Fe, annealed | 18.00 |
| Unannealed | 14.50 |
| Swedish, c.l.f. N.Y., c.l., in bags | 10.90 |
| Electrolytic iron: | |
| Annealed, 99.5% Fe | 42.50 |
| Unannealed (99+ % Fe) | 36.50 |
| Unannealed (99+ % Fe) (minus 325 mesh) | 53.50 |
| Powder Flakes | 48.50 |
| Carbonyl Iron: | |
| 97.9-99.8% size 5 to 10 microns | 83.00-148.00 |
| Aluminum: | |
| Carlots, freight allowed | 31.00 |
| Atomized, 500 lb drums, freight allowed | 34.00 |
| Antimony, 500 lb lots | 78.00 |
| Brass, 20-ton lots | 30.00-39.00 |
| Bronze, 10-ton lots | 52.25-60.00 |
| Copper: | |
| Electrolytic | 45.75 |
| Reduced | 12.75* |
| Lead | 7.50* |
| Magnesium | 75.00-85.00 |
| Manganese: | |
| Minus 100 mesh | 57.00 |
| Minus 35 mesh | 52.00 |
| Minus 200 mesh | 62.00 |
| Nickel unannealed | 89.50 |
| Nickel-Silver 5-ton lots | 48.50 |
| Silicon | 38.50 |
| Solder | 8.50* |
| Stainless Steel, 302 | 87.00 |
| Zinc, 10-ton lots | 17.50-25.00 |
| Tungsten | Dollars |
| Melting grade, 99% 60 to 200 mesh: | |
| 1000 lb and over | 5.35 |
| Less than 1000 lb | 5.50 |
| Chromium, electrolytic 99.9% Cr min. | 3.50 |

* plus cost of metal.

## STAINESS STEEL

(Add 4.7% to extras where new extra cards have not been issued)

| Type | Sheets | C.R. Strip | Bars Wire Structurals |
|---|---|---|---|
| 301 | 44.25 | 36.50 | 33.75 |
| 302 | 44.50 | 39.75 | 34.00 |
| 303 | 46.50 | 43.50 | 36.50 |
| 304 | 46.50 | 41.75 | 35.50 |
| 309 | 60.50 | 59.25 | 48.25 |
| 316 | 61.50 | 63.50 | 53.00 |
| 321 | 53.00 | 52.00 | 40.00 |
| 347 | 58.00 | 56.50 | 44.75 |
| 410 | 39.00 | 32.75 | 27.50 |
| 416 | 40.00 | 40.00 | 28.00 |
| 420 | 47.00 | 50.25 | 33.50 |
| 430 | 41.50 | 33.25 | 28.00 |
| 501 | 29.25 | 27.75 | 15.25 |

Balt., Types 301-347 and 430 sheets, except 303 and 309 E2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa. sheets and strip except Types 303, 309, 416 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Harrison, N. J., wire, Type 302, 33.00c; Type 304, 34.50c; Type 316, 51.50c, including 4.7% increase.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars; sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, bars, shapes U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, strip A4.

Youngstown, strip C8.

## CLAD STEELS

(Cents per pound; add 4.7% to base price and extras)

| Cladding Stainless | Plates Carbon Base 10% | Plates Carbon Base 20% | Sheets Carbon Base 10% | Sheets Carbon Base 20% | Sheets Copper Base Both Sides |
|---|---|---|---|---|---|
| 302 | .... | .... | 19.75 | 26.24-27.50 | 77.00 |
| 304 | 25.00 | 29.50 | 24.50 | 27.50-27.77 | 77.00 |
| 309 | 30.50 | 35.00 | .... | .... | .... |
| 310 | 36.50 | 41.00 | .... | .... | 144.00 |
| 316 | 29.50 | 34.00 | 26.00 | 35.92-36.50 | .... |
| 317 | 34.50 | 39.00 | .... | .... | .... |
| 318 | 33.50 | 38.00 | .... | .... | .... |
| 321 | 26.50 | 31.00-32.00 | 23.00 | 33.00 | 111.00 |
| 347 | 27.50 | 32.00 | 24.00 | 33.50-33.83 | 130.00 |
| 405 | 21.25 | 27.75 | .... | .... | .... |
| 410 | 20.75 | 27.25 | .... | .... | .... |
| Nickel | 33.55 | 45.15 | .... | .... | .... |
| Inconel | 41.23 | 54.18 | .... | .... | 165.00 |
| Monel | 34.93 | 46.28 | .... | .... | .... |
| Copper* | .... | .... | .... | 44.00 | .... |

| | Strip Carbon Base Cold-Rolled 10% | Strip Carbon Base Cold-Rolled Both Sides | Strip Carbon Base Hot-Rolled 10% | Strip Carbon Base Hot-Rolled Both Sides |
|---|---|---|---|---|
| Nickel | 41.00 | 54.00 | .... | .... |
| Copper* | 23.70 | 26.65 | 20.20 | 26.40 |

* Deoxidized. Production points: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

## WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

| | SHEETS | | | STRIP | | BARS | | | Standard Structural Shapes | PLATES | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | H.R. 18 Ga., Heavier* | C.R. | Gal. 10 Ga.† | H.R.* | C.R.* | H.R. Rds. | C.F. Rds.‡ | H.R. Alloy 4140††§ | | Carbon | Floor |
| Baltimore | 5.81 | 7.17 | 7.38 | 6.42 | ... | 6.41 | 6.78 | 11.27 | 6.47 | 6.47 | 7.70 |
| Boston | 6.51 | 7.46 | 8.93 | 6.55 | ... | 6.57 | 7.82 | 12.37 | 6.56 | 6.80 | 7.98 |
| Buffalo | 5.80 | 6.65 | 8.31 | 6.21 | ... | 6.05 | 7.45 | 11.07 | 6.08 | 6.30 | 7.67 |
| Birmingham | 5.80 | 6.65 | 7.70[2] | 5.80 | ... | 5.80 | 7.95 | ... | 5.95 | 6.10 | 8.15 |
| Chicago | 6.15 | 7.02 | 7.90 | 6.30 | ... | 5.98 | 7.16 | 11.65 | 6.27 | 6.28 | 7.18 |
| Cincinnati | 6.28 | 6.89 | 8.26 | 6.40 | ... | 6.28 | 7.38 | 11.87 | 6.54 | 6.55 | 7.60 |
| Cleveland | 5.80 | 6.65 | 7.54 | 6.00 | ... | 5.89 | 7.01 | 10.79 | 6.28 | 6.12 | 7.51 |
| Detroit | 6.00 | 6.85 | 8.59 | 6.13 | 6.85 | 6.14 | 7.40 | 10.92 | 6.42 | 6.47 | 7.52 |
| Houston | 6.74 | ... | 8.62 | 6.89 | ... | 6.98 | ... | ... | 6.82 | 6.78 | 8.16 |
| Jersey City, N.J. | 6.26 | 7.27 | 8.32 | 6.56 | ... | 6.75 | 7.90 | 9.54 | 6.39 | 6.60 | 8.01 |
| Los Angeles | 7.05 | 8.70 | 8.45 | 6.75 | 11.20 | 6.95 | 9.50 | 12.05 | 6.60 | 6.70 | 8.90 |
| Milwaukee | 6.32 | 7.19 | 8.07 | 6.47 | ... | 6.15 | 7.43 | 11.82 | 6.44 | 6.45 | 7.35 |
| Moline, Ill. | 6.16 | 7.00 | 8.25 | 6.19 | ... | 6.18 | 8.00 | ... | 6.30 | 6.30 | ... |
| New York | 6.26 | 7.27 | 8.32 | 6.56 | ... | 6.74 | 8.00 | 11.04 | 6.39 | 6.60 | 8.01 |
| Newark, N. J. | 6.62 | 7.41 | 8.53 | 6.56 | ... | 6.59 | 8.06 | ... | 6.39 | 6.60 | 7.18 |
| Norfolk, Va. | 6.75 | ... | ... | 7.30 | ... | 7.00 | 8.50 | ... | 6.85 | 6.95 | 7.65 |
| Pittsburgh | 6.11 | 7.13 | 7.70 | 6.45 | 8.30 | 6.57 | 7.76 | 10.79 | 6.17 | 6.24 | 7.37 |
| Philadelphia | 6.30 | 7.30 | 7.92 | 5.94 | ... | 5.83 | 7.01 | 11.34 | 6.30 | 6.30 | 7.18 |
| Portland, Oreg. | 7.80 | 9.05 | 9.30 | 7.50 | ... | 7.25 | 9.75 | ... | 7.25 | 7.05 | 9.25 |
| Richmond, Va. | 6.14 | 6.95 | 8.68 | 6.53 | ... | 6.30 | 7.73 | ... | 6.58 | 6.68 | 7.80 |
| St. Louis | 6.10 | 6.94 | 8.05 | 6.14 | ... | 6.28 | 7.53 | 10.95 | 6.35 | 6.35 | 7.58 |
| St. Paul | 6.47 | 7.31 | 8.56 | 6.50 | ... | 6.49 | 7.92 | ... | 6.61 | 6.61 | 7.84 |
| San Francisco | 6.90 | 8.20 | 9.50 | 6.75 | ... | 6.85 | 8.70 | 12.05 | 6.50 | 6.75 | 8.90 |
| Seattle-Tacoma | 7.16 | 8.24 | 9.20 | 7.40 | ... | 7.27 | 9.74 | 11.45 | 6.63 | 7.04 | 8.90 |
| Spokane (city) | 7.80 | 9.40 | 9.80 | 7.15 | ... | 7.10 | 9.80 | 11.90 | 7.00 | 7.10 | 9.15 |
| Washington | 6.31 | 7.61 | 8.90 | 6.89 | ... | 6.90 | 8.13 | ... | 6.93 | 6.95 | 8.17 |

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [5]—1000 to 1999 lb.

# Strike Threat Lifts Warehouse Steel Sales

### Demand continues brisk with some users protecting their supplies against possibility of a mill shutdown after the close of June. Price adjustments still being made

**Cleveland** — Price adjustments to reflect recent increases in mill extras on the various products are being put into effect by district warehouses. Since some of the mills were slower than others in coming out with new extra cards it may be several weeks before warehouse schedules are completely adjusted.

Meanwhile, demand on the warehouses continues strong, especially on automotive and appliance account. Some of the buying may be protective with a steel strike a possibility at the end of June.

Over-all warehouse stocks are substantially improved as compared with some months back, but shortages persist in certain popular items and inventories continue to be described as unbalanced. Pressure on the distributors is greatest for hot and cold-rolled sheets, large-size bars, heavy plates and certain structural sections.

**Philadelphia** — Warehouse business continues brisk. Tonnagewise, and on a daily basis, business this month should be comparable with that of April, and on a dollar volume basis, ahead of last month, because of the higher prices being put into effect as a result of increased mill extras. Hot-rolled sheets are now quoted 6.30 cents on a country basis, cold-rolled sheets 7.30, galvanized 7.92, rot-rolled alloy 11.34, shapes 6.30, carbon plates 6.30.

**Cincinnati** — Warehouse business appears to be holding up well in this area. May volume is slightly better than in April so far. All items are in active demand with exception of galvanized sheets, which picked up a little in the past week. Alloy products show a slight inventory improvement.

**Boston**—Steel prices out of warehouse are still being revised upward. Extras are added with base price spreads frequently advanced to maintain margins. At warehouse levels, consumers are now price grumbling, but demand is holding. Sheets, hot and cold-rolled carbon, are under heavy demand and galvanized are moving better. All complain of lack of structural shapes. In bars only cold-finished rounds in slightly larger range of sizes are sufficient to meet demand. Stocks lack balance. Warehouses are still taking what mills can ship and as result some product inventories are in better shape and ample while others are short.

**Chicago** — Steel warehouses have virtually completed their price revisions to reflect the higher extras recently made effective by the mills. For carbon steel products the increases range from $3 to $6 a ton and they serve as no deterrent to demand. It is impossible to pick out soft spots and speculate where and when the turning point may come. A possible indicator is that bidding on construction work, building and highway, is more competitive.

**Los Angeles**—Reflecting the rise in mill prices, warehouse quotations are increased 5 cents to 65 cents. Hot-rolled bars are up 15 cents to $6.95 per 100 pounds and cold-finished bars advanced 65 cents to $9.50. Prices on cold-rolled sheets are up 5 cents, and hot-rolled sheets 25 cents.

**Seattle**—While potential demand for warehouse items is heavy, distributors report reduced volume as result of the current strike in the metalworking industry. Many shops are unwilling to add to inventory. One large house reports galvanized sheets in poor demand. The movement of stainless is hampered by government regulations. Additional price schedule adjustments were made last week, including an increase in strip from 7.20 cents to 7.40 cents.

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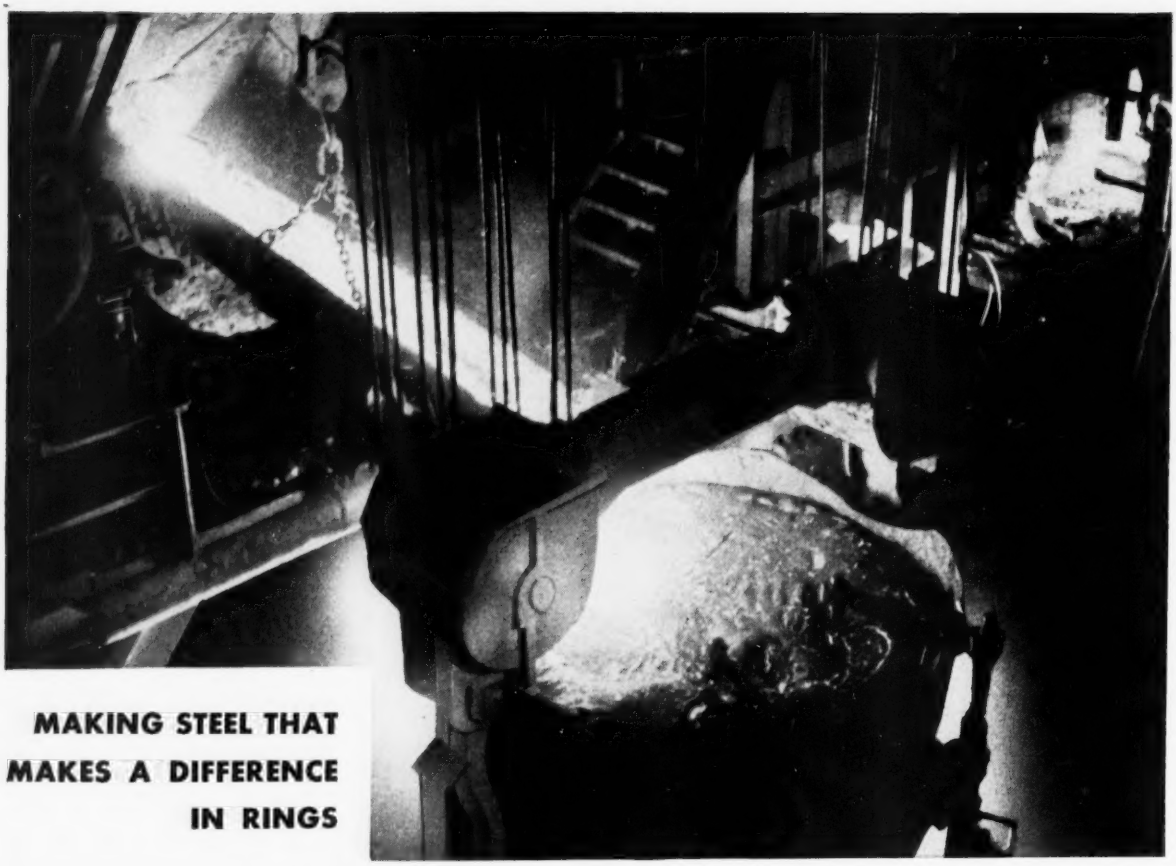

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5. **Experience**—produced by skilled workmen with 20 to 40 years experience.

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# More Sheet Extra Cards Revised

## Mills effecting adjustments in schedules for electrical and enameling grades. Pressure of demand unabated. No supply easing in sight

Sheet and Strip Prices, Page 209 & 210

**Cleveland** — The mills will enter third quarter with substantial tonnage carryover from the second three months of the year. As a result not much open space will be available in schedules during the summer unless unforeseen cancellations are received. Extent of the carryover will vary among the mills, but some think it will take up possibly one month's production.

Sellers are booked as far into third quarter as they care to accept tonnage and there is nothing to indicate any slackening in demand or easing of consuming pressure over coming weeks. As a matter of fact, with a steel strike this summer seen as at least a remote possibility, some consumers are showing interest in protective covering. In view of present tight supply conditions, however, there is little prospect much, if any, protective tonnage will be placed.

Sheet prices are becoming stabilized after the recent revisions in extra cards. Latest card changes announced by Republic Steel Corp. applied to enameling stock, silicon sheets and coiled silicon strip. The new cards became effective May 18, that on enameling stock superseding schedules in effect since Nov. 30, 1950, and that on silicon sheets replacing lists in effect since Dec. 22, 1949.

Changes in the enameling card apply on gage and width, length, order quantity, item quantity, circles, sketches, thickness tolerance, drawing quality and packaging. Changes in the silicon card apply on order quantity, item quantity, core plated, deoxidizing, tension testing, and packaging.

**Boston**—In trying to place orders 50 to 100 per cent heavier than normal tonnage asked, sheet and strip users are aiming at higher inventories, although demand for fabricated goods and components made from flat-rolled products is strong with backlogs substantial.

Producers willing to schedule for the period are booked through third quarter on carbon grades and beyond on stainless. New applications for stainless in straight chromium grades is growing, pointing to even greater use when nickel-bearing is available. That period is not in sight, however.

Cold strip extras, including spring steel, are $6 to $10 higher on some grades, but few buyers show concern as to price. Not until competition develops in end-use products are prices likely to be a more serious factor. So long as flat-rolled consumers can pass on the increase with sustained volume of business, procurement, rather than price, is the major factor in buying policy.

**New York** — Virtually all major grades of sheets are moving actively. Some producers regard demand as being at highest level this year. Mills look for high operations well into fourth quarter.

**Philadelphia**—Virtually all producers of sheets and strip have now completed revisions in extras. In general, strip extras came in for attention after sheet schedules had been revised. Alan Wood Steel Co., Conshohocken, Pa., revised carbon strip extras effective May 18.

Pressure for most major grades of sheets and strip continues unabated. Mass vacations at many consuming plants this summer may slow down demand a trifle.

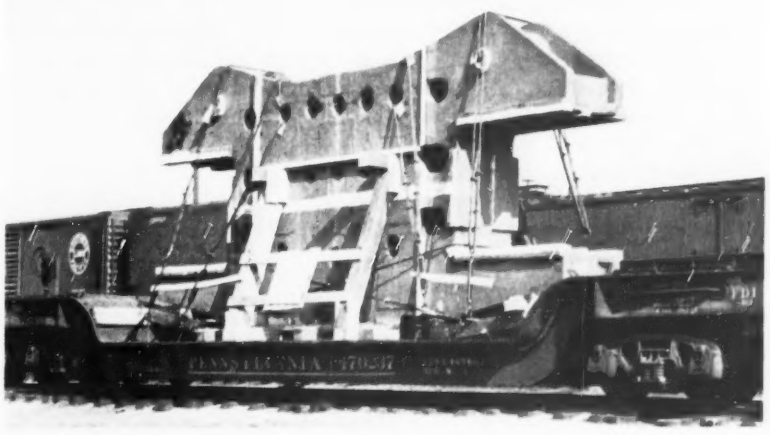
**Pittsburgh** — United States Steel Corp. announced an increase on sheet and strip extras effective May 14. New extra cards are going to customers on the following items: Hot and cold rolled carbon sheets, long ternes, vitrenamel, electrical sheet, coils and cut lengths, hot and cold rolled carbon steel strip, sheet piling and accessories, carbon steel cooperage hoop, and galvanized flat sheets and allied products.

**Cincinnati**—Evidence of some softening in demand by farm implement companies has appeared at the mill level. This weakness is minor. Automotive and household appliances are exerting the main push in this field. One mill closed its books for the third quarter and is running about 45 days behind on delivery. Galvanized sheets continue to move at a slow pace.

**Chicago**—Sheet demand holds as strong as ever with every consuming field pushing for all possible tonnage. Recently, electrical sheets had shown some signs of easing up but this situation is now reversed.

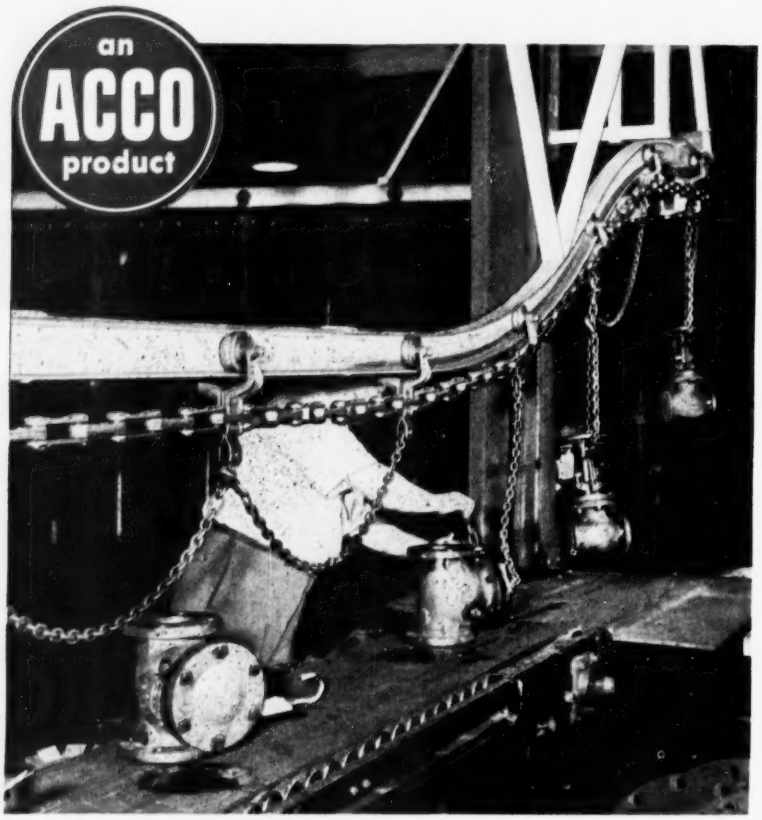
**St. Louis**—Granite City Steel Co. has increased extras roughly $4.50 a ton on cold-rolled sheets and $4 on hot-rolled. Porcelain enameling, galvanized and electrical sheets went up less than $1. Drawing extras were increased $2. Base prices remain unchanged. September bookings have been allocated and are coming in rapidly.

**San Francisco**—Annual capacity of the Pittsburg, Calif., plant of Columbia-Geneva Steel Division, U. S. Steel Corp. to process cold-rolled and galvanized sheets has been boosted to 250,000 tons annually through addition of a four-stand cold reduction mill.



### Pennsy Totes Giant Casting for Huge Press

This 292,700 lb casting is being shipped to naval ordnance plant at South Charleston, W. Va., for machining prior to installation at Wyman-Gordon Co.'s plant in North Grafton, Mass. It will form part of a huge hydraulic press, designed and being built by Loewy Construction Co. Inc., New York, for the Air Force for the manufacture of structural parts for jet airplanes. The casting measures 30 ft in length, 46½ in. in width and 13 ft 3 in. in height

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## Semifinished Steel . . .

Semifinished Prices, Page 208

**Pittsburgh**—U. S. Steel Corp. and its general operating divisions, American Steel & Wire Division, Columbia-Geneva Steel Division, and Tennessee Coal & Iron Division, announced revisions in extras covering carbon forging ingots, forging and rerolling blooms, billets and slabs, and skelp. While a few items were reduced the over-all effect of the revisions is an upward adjustment. The new schedules became effective May 16.

Size extras on skelp were increased, these ranging from $2 to $8 per ton. Rerolling quality semifinished extras for smaller sizes are up $11. Specification and tolerance extras are up $2 for rerolling quality, and a new extra of $14 per ton is applied on rerolling quality semifinished for carbon and manganese in combination. Size extras for forging quality are up $3 to $7 for the smaller squares or rectangles. Size extras on forging ingots are up, over 34-in. to 36-in., which formerly carried no extra, now taking a charge of $5 per ton, and on sizes 36-in. to 70-in. the extra is increased $6.

## Plates . . .

Plate Prices, Page 208

**New York**—Plate demand appears even stronger than a month ago. Consumer inventory adjustments are isolated. Despite tapering ship work, the yards are still pressing for certain sizes. Boiler and tank fabricators are not getting as much plate tonnage as they want. One leading producer announced new extras on alloy plates.

**Philadelphia**—All eastern plate mills have revised extras on plain carbon material. Changes in alloy plate extras have not yet been generally announced. There have been no changes in extras on floor plate, and it is considered possible that there will not be any at this time, for competitive reasons.

Producers of plain carbon material have little space for non-rated tonnage before September.

**Pittsburgh**—Extra card announced for alloy plates by U. S. Steel Corp. includes an odd-gage extra amounting to $3 per ton and a new drawing quality extra of $8 per ton. Size extras vary between $4 and $10 per ton depending upon width and thickness. Treatment charges reflect a one-third increase for annealing and normalizing. Double treatment, heat-treating, spheroidize annealing charges are up 40 per cent.

**Boston**—Plate shops are placing orders for third quarter as far ahead

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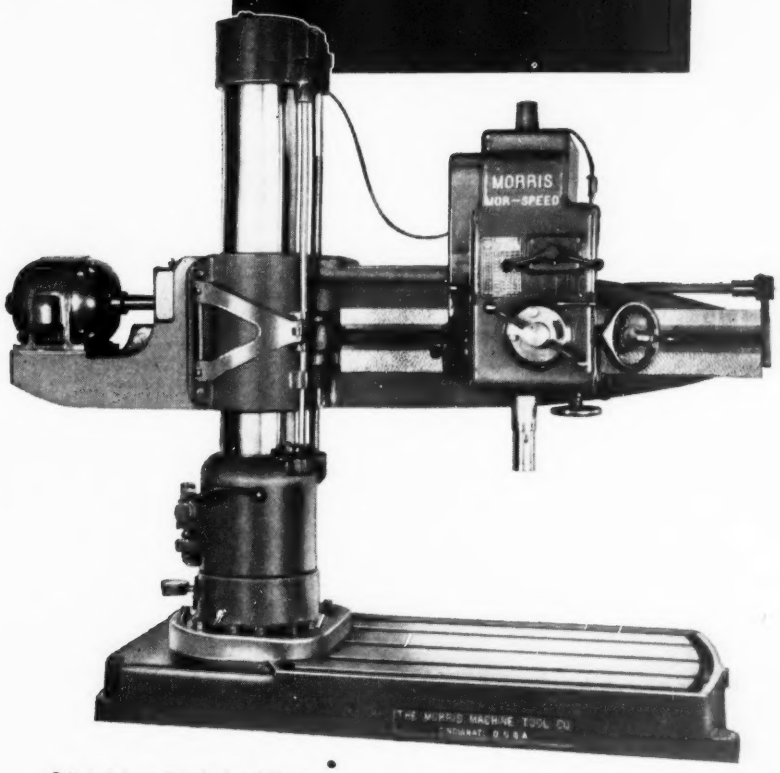


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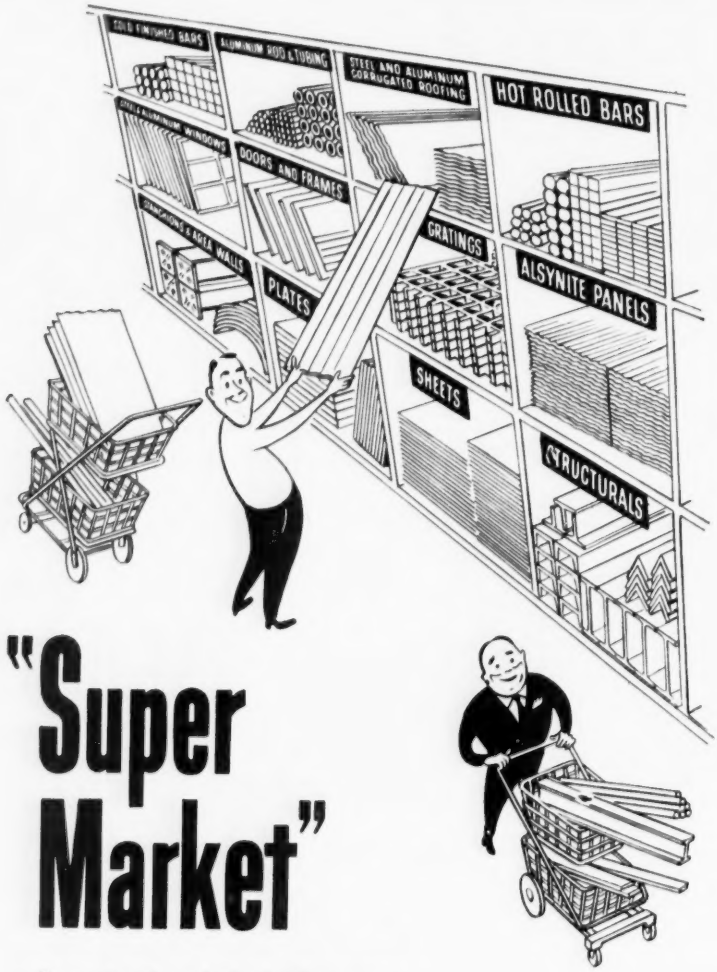


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as producers are willing to accept tonnage, August in some cases. Demand for plates is heavy, notably large and wide sizes.

Wide mills, rolling sizes over ⅜-inch only, freeze some light and narrow tonnage on sheet-strip mills. Some of the latter would like ordinarily to go back to sheet production.

Here and there plate consumers have built up stocks of one or two sizes, result of off heats and gages.

Weldment shops are now getting rated replacement tonnage under B-5 instead of Z-2 order. This means in general less heavy plate tonnage, but approximately 50 per cent of backlogs which are up some since first of year.

**Cleveland** — Republic Steel Corp. has issued a new extra card on hot-rolled carbon steel plates, the new list becoming effective May 20. It supersedes the schedule in effect since Dec. 21, 1949.

**Seattle** — Current plate contracts are behind schedule due to the strike in metalworking plants in this area. In addition, smaller shops are handicapped by the continued shortage of steel.

## Steel Bars . . .

Bar Prices, Page 208

**Boston**—Cold-finished carbon rounds in smaller sizes, 2-inch and under, balance demand. In part this is due to converter production, now becoming less certain because of hot-rolled allotment revisions. There is a wave of changes in August-September order specifications to avoid higher extra charges. Most carbon bars users are asking for more tonnage than before. Alloy volume is slightly under carbon demand. Cold-rolled flats in all grades have not eased. Forge shops are asking for more steel. Pressure for tonnage for June is strong.

**Philadelphia**—Increasing stringency in hot-rolled carbon bars is causing consumers to turn more to warehouses than in any time in recent weeks. European steel on which deliveries can be had within 6 to 8 weeks and at prices fairly comparable with domestic quotations also is more attractive.

**Cincinnati** — Heavy rounds are scarce. The price increases have not affected this market as yet and are not expected to have any marked influence on demand. Alloy bars have run into a spotty condition with some warehouses reporting receipts down 50 per cent. Machine tool firms are shopping around and ordering just what they need.

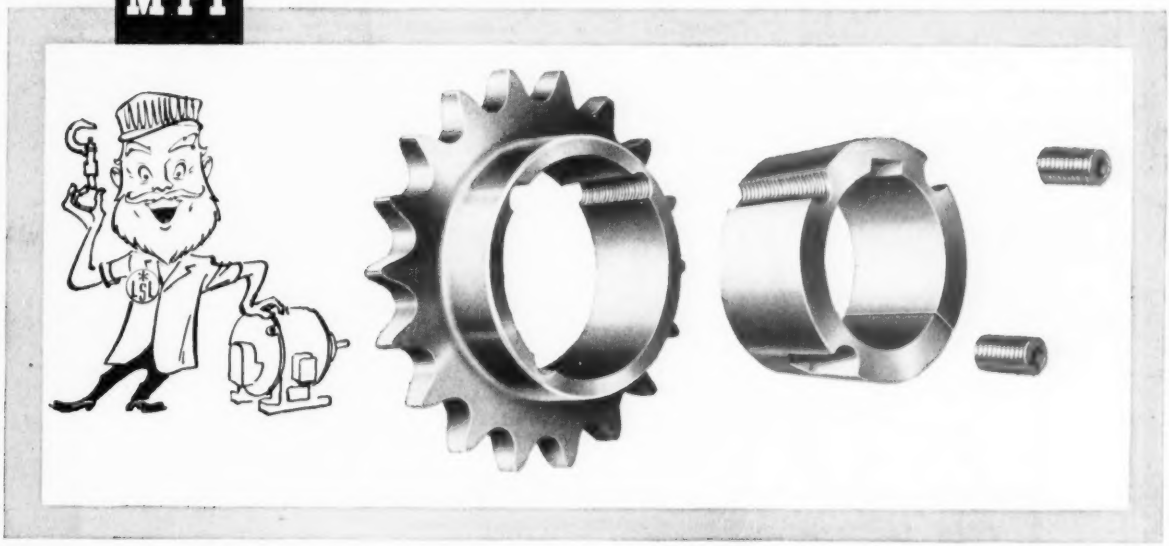
**Cleveland** — Increase in bar prices resulting from the recent upward ad-

(*Please turn to Page* 222)

SPROCKET
NEWS FROM MORSE

# NOW, GET EVEN FASTER DELIVERY OF MORSE STOCK SPROCKETS; SAVE MONEY, TOO

**Morse Stock Roller Chain Sprockets with Taper-Lock Bushings now available from Morse Distributors. This newest addition to the Morse line makes possible immediate delivery of ready-to-use sprockets.**



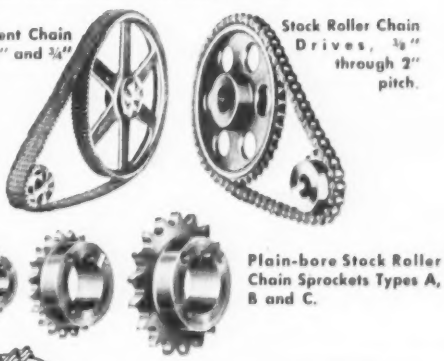
Now, practically every sprocket requirement you may have, can be filled from your local Morse Distributor's shelves.

In addition to the wide variety of Morse Steel and Cast-Iron Stock Sprockets always available, your Morse Distributor now offers Type B Stock Sprockets from ½" pitch through 1¼" pitch, 10 to 112 teeth, with Taper-Lock Bushings. The Taper-Lock Bushings are available with bore diameters from ½" to 3" in increments of 1/16".

*With Morse Taper-Lock Sprockets you will realize these advantages:*

**(1)** Prompt delivery—no more delay for reboring, keyseating or other alterations. **(2)** Flush bushings permit close mounting—Morse Taper-Lock Sprockets need no more shaft space than any Type B sprockets. **(3)** Compliance with safety requirements—there are no flanges, collars or protruding screw heads to create dangerous operating conditions. **(4)** Low cost.

**COMPLETE MORSE STOCK SPROCKET LINE**



**Stock Silent Chain Drives ½" and ¾" pitches.**

**Stock Roller Chain Drives, ⅜" through 2" pitch.**

**Plain-bore Stock Roller Chain Sprockets Types A, B and C.**

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MECHANICAL POWER TRANSMISSION PRODUCTS

Call your Morse Distributor today. Look under "Chains" or "Power Transmission" in your phone directory's yellow pages.

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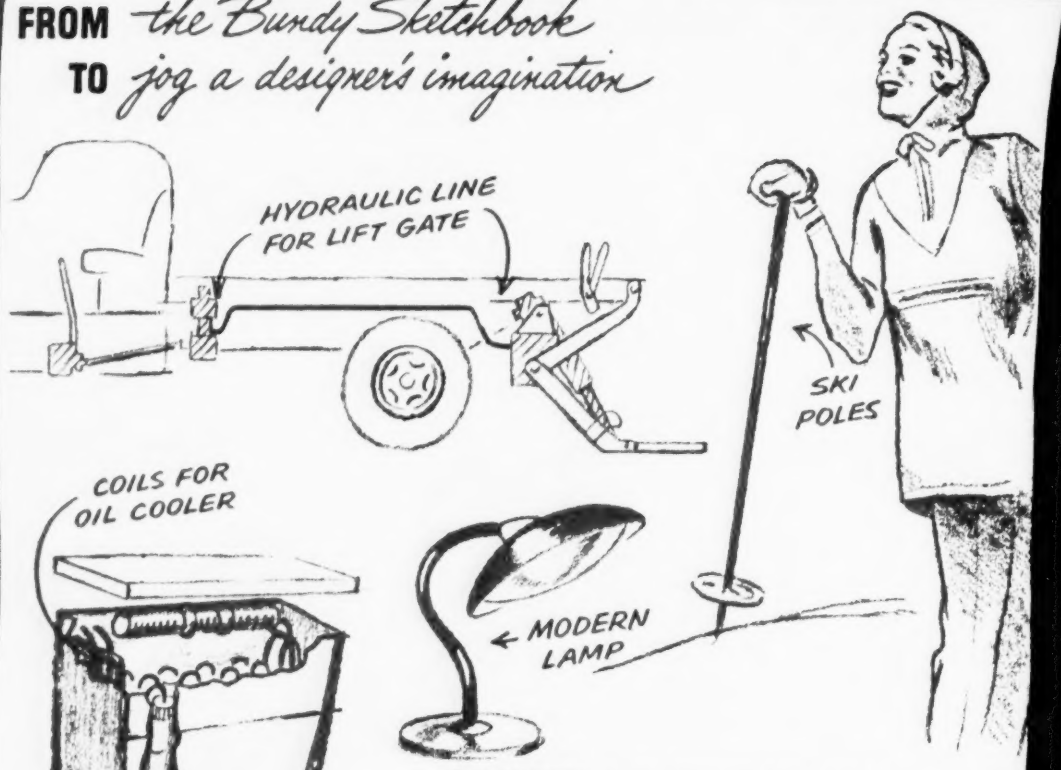
**FROM** *the Bundy Sketchbook*
**TO** *jog a designer's imagination*




*REMARKS* Need tubing that will do a better job for you? Look into Bundyweld. Need fabricated tubing parts? Let us tell you about Bundy's unmatched facilities. Need engineering help? Let us show you what we can do.

WRITE → today for catalog or for help in developing your idea for a tubing application.

BUNDY TUBING CO., DETROIT 14, MICH.

# Bundyweld Tubing

® DOUBLE-WALLED FROM A SINGLE STRIP

**Leakproof**
**High thermal conductivity**
**High bursting point**
**High endurance limit**
**Extra-strong**
**Shock-resistant**
**Ductile**

**Lightweight**
**Machines easily**
**Takes plastic coating**
**Scale-free**
**Bright and clean**
**No inside bead**
**Uniform I.D., O.D.**

WHY BUNDYWELD IS BETTER TUBING

Bundyweld starts as a single strip of copper-coated steel. Then it's . . .

continuously rolled twice around laterally into a tube of uniform thickness, and

passed through a furnace. Copper coating fuses with steel. Result . . .

Bundyweld, double-walled and brazed through 360° of wall contact.

← NOTE the exclusive patented Bundyweld beveled edges, which afford a smoother joint, absence of bead and less chance for any leakage.

**Bundy Tubing Distributors and Representatives:** *Cambridge 42, Mass.:* Austin-Hastings Co., Inc., 226 Binney St. • *Chattanooga 2, Tenn.:* Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg. • *Chicago 32, Ill.:* Lapham-Hickey Co., 3333 W. 47th Place • *Elizabeth, New Jersey:* A. B. Murray Co., Inc., Post Office Box 476 • *Philadelphia 3, Penn.:* Rutan & Co., 1717 Sansom St. • *San Francisco 10, Calif.:* Pacific Metals Co., Ltd., 3100 19th St. • *Seattle 4, Wash.:* Eagle Metals Co., 4755 First Ave. South *Toronto 5, Ontario, Canada:* Alloy Metal Sales, Ltd., 181 Fleet St., E. • **Bundyweld nickel and Monel tubing is sold by distributors of nickel and nickel alloys in principal cities.**

# CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

## MANGANESE ALLOYS

**Spiegeleisen:** (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

**Standard Ferromanganese:** (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Sheridan, Pa., Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, Philo or Marietta, O., Lynchburg, Va. Base price: $227, Johnstown, Pa.; $226, Anaconda, Mont. (Mn 74-76%, C 7% approx.) Base price per net ton $200, Etna, Pa.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

**Low-Carbon Ferromanganese, Regular Grade:** (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P. 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

**Medium-Carbon Ferromanganese:** (Mn 80-85%, C. 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

**Manganese metal,** 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

**Electromanganese:** Carload, 30c; ton lots, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

**Silicomanganese:** (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

## TITANIUM ALLOYS

**Ferrotitanium, Low-Carbon:** (Ti 20-25%, Al 3.5% max. Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55 (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

**Ferrotitanium, High - Carbon:** (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

**Ferrotitanium, Medium-Carbon:** (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

## CHROMIUM ALLOYS

**High-Carbon Ferrochrome:** Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

**Low-Carbon Ferrochrome:** (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.60c per lb contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

**Foundry Ferrochrome, High Carbon:** (Cr 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25c per lb of contained Cr, C.l., packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

**Foundry Ferrochrome, Low Carbon:** (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

**Low-Carbon Ferrochrome Silicon:** (Cr 34-41%, Si 42-49%, C 0.06% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

**Ferrochrome Silicon, No. 2:** (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 3" x down, delivered.

**Chromium Metal:** (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c; prices on 0.10 per cent carbon grade, C grade, $1.12 per lb of contained chromium, up 4c.

## CALCIUM ALLOYS

**Calcium-Manganese-Silicon:** (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

**Calcium-Silicon:** (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

## SILICON ALLOYS

**25-30% Ferrosilicon:** Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

**50% Ferrosilicon:** Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

**Low-Aluminum 50% Ferrosilicon:** (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

**75% Ferrosilicon:** Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

**90-95% Ferrosilicon:** Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

**Silicon Metal:** (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

**Alsifer:** (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

## ZIRCONIUM ALLOYS

**12-15% Zirconium Alloy:** (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

**35-40% Zirconium Alloy:** (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

## VANADIUM ALLOYS

**Ferrovanadium:** Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

**Grainal:** Vanadium Grainal No. 1, $1 per lb; No. 6. 68c; No. 79, 50c. freight allowed.

**Vanadium Oxide:** Contract, less carload lots $1.28 per lb contained $V_2O_5$, freight allowed. Spot, add 5c.

## TUNGSTEN ALLOYS

**Ferrotungsten:** (70-80%). 10,000 lb W or more, $4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

## BORON ALLOYS

**Ferroboron:** (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

**Borosil:** (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

**Bortam:** (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

**Carbortam:** (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

## BRIQUETTED ALLOYS

**Chromium Briquets:** (Weighing approx. 3½ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c. Deld. Add 0.25c for notching. Spot, add 0.25c.

**Ferromanganese Briquets:** (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.06c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicomanganese Briquets:** (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ⅛ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packed 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

**Silicon Briquets:** (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

**Molybdic-Oxide Briquets:** (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

## OTHER FERROALLOYS

**Ferrocolumbium:** (Cb 56-60%, Si 8% max., C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

**Ferrotantalum—Columbium:** (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

**Silicax Alloy:** (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton lot 49c. Delivered.

**SMZ Alloy:** (Si 60-65%, Mn 5-7%, Zr, 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

**Graphidox No. 4:** (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

**V-S Foundry Alloy:** (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

**Simanal:** (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

**Ferrophosphorus:** (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

**Ferromolybdenum:** (55-75%). Per lb, contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

**Technical Molybdic-Oxide:** Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14, in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

"New Process"
Punches • Dies • Rivet Sets
Compression Riveter Dies
Made of highest standards and uniform quality thus insuring maximum service.
Since 1903
Large inventory of stock sizes of round punches and dies also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.
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(*Continued from Page 218*)

justment in extras is not expected to materially deter buying, though some changing in order patterns is indicated as buyers seek to avoid, as far as possible, paying the higher extra charges. Demand is so pressing, especially for the larger bars, however, that no significant resistance to the higher prices is anticipated.

Tight supply conditions continue to persist into third quarter with the mills booked as far into the quarter as they care to accept new business.

**Seattle** — Ocean freight rates on iron and steel bars, ingots, angles and fence posts have been cut from $20 ton weight to $19 ton weight by the West Coast-South American Conference.

## Wire . . .

Wire Prices, Page 210

**Boston** — On numerous carbon wire products, September schedules are filling. Wire shipments in June are expected to be heavy, but July volume will drop. Most industrial consumers of wire are paying $6 per ton higher due to extras which extend from several grades of rods to finished wire, including cold heading. Demand for cold heading wire is steady, but inventories are not badly off balance except for a limited number of specifications. Cutback in wire wheel order by one automobile builder has been reinstated, bolstering stainless. For heat-treating, annealing and normalizing extras average about $4 to $5 per ton.

## Tubular Goods . . .

Tubular Goods Prices, Page 211

**Pittsburgh** — National Tube Division, U. S. Steel Corp., has revised discounts for seamless and buttweld pipe, black and galvanized. Some revisions of classification are noted in revised discounts for seamless pipe.

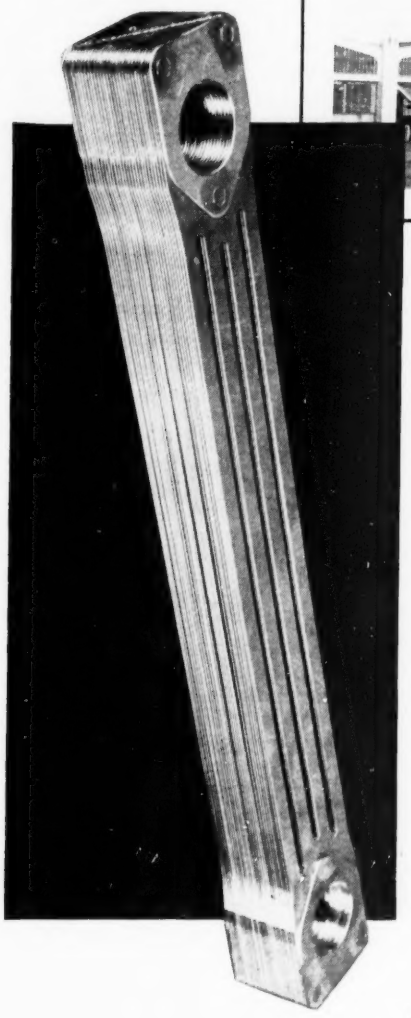
With the same effective date, May 16, National Supply Co. and Jones & Laughlin Steel Corp. announced similar revisions in their pipe discount lists.

**Chicago** — Jobber stocks of galvanized pipe appear fairly plentiful in all sizes. Same does not apply to black pipe, however. Distributors took all of the pipe allocated them for July, a development which surprised the mills somewhat in the light of rising stocks which has been in evidence recently.

**Boston**—Demand for tubular products has eased. Direct shipments on

*The YH-21 "Work Horse" manufactured by Piasecki Helicopter Corporation, Morton, Pa., is the largest helicopter used by U.S. Military Forces.*

*Tension-torsion strap assembly consists of 25 stainless steel straps separated by spacers. It is connected with rotor blade and rotor hub by stainless steel pins.*



## REPUBLIC METALLURGICAL SERVICE

# Helps Eliminate a Thrust Bearing Problem

Simpler mechanism . . . less weight . . . reduced friction . . . longer life! These are advantages of the stainless steel tension-torsion strap assembly recently designed by Piasecki Helicopter Corporation engineers for the Air Force H-21 "Work Horse"—with the assistance of a Republic field metallurgist in determining the physical properties of the required ENDURO Stainless Steel.

The strap assembly carries the centrifugal force generated by the revolving blades yet allows changes in pitch. Because of the new stainless steel strap, thrust bearings have been eliminated and the assembly lightened. Friction has been reduced, making it easier to change the pitch of the blades.

Thus Republic metallurgical service—and ENDURO Stainless Steel—help add maneuverability and stamina to the mighty Piasecki "Work Horse".

Are you studying new applications, product developments and processes in which the high physical—and chemical—properties of ENDURO Stainless Steel will be valuable? This same competent Republic metallurgical service is available to you now. It is confidential and without obligation. Just write:

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buttweld are not balancing tonnage turned down by distributors. More buttweld will be in that category in July. Seamless jobber quotas are taken, notably in 4 to 6-inch, but pressure is off. Same applies to pressure and mechanical tubing. Distributors are building up racks on mechanical. Price increases in steel pipe and tubing are largest in smaller sizes, $7.50 per ton, buttweld, one half to one-inch, while seamless, 5 to 6-inch, most popular sizes here about, is $15.50 a ton higher.

**New York**—United States Steel Export Co. has increased prices on tubular goods in line with changes in the domestic market. The new prices, with freight included to New York, Philadelphia or Baltimore, are effective with shipments from the producing mills May 16.

**Cleveland**—National Tube Division, U. S. Steel Corp., last week announced upward revisions in the price structure for seamless and welded standard and line pipe, carbon and alloy seamless oil country goods, and carbon and alloy seamless pressure and mechanical tubing. The revised schedules became effective May 16.

## Structural Shapes . . .

**Structural Shape Prices, Page 208**

**Philadelphia** — Private structural work in this district remains light with small fabricators in particular manifesting a lively interest in every job that comes out that is not too large for them to handle. For instance, an unusual number of companies, 40 in all, have taken out plans for a 150-ton central heating plant at Dover, Del., air base. That these plans are free may have something to do with it and some may have been interested in just certain features. Some may not submit figures at all. At the same time, interest in the project far exceeded expectations.

Despite lively interest, which implies lively competition, bids are generally higher as result of increased steel mill extras. One fabricator estimates extras on shapes and plates have advanced costs at least $5 per ton. However, competition is keeping fabricators from passing along the full increase, whatever it may be, to the builders at least for the present.

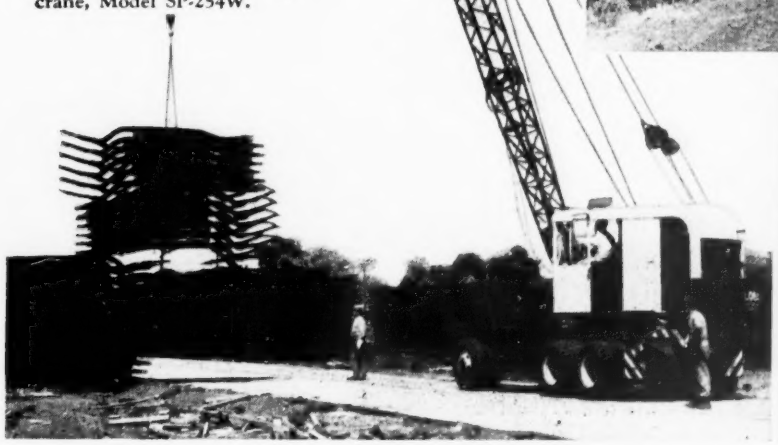
**Pittsburgh** — Supply of structural steel is expected to be tight through balance of the year. Customers are beginning to get their quota assignments, and will probably find their immediate needs taken care of. Many construction projects are in the offing for which no contracts have been released, and opinion is

(*Please turn to Page* 227)

# Big Yard...OR Back Lot...

**BELOW . . .**
a large auto plant handles large bundles of car frames with their 20-ton Lorain Self-Propelled crane, Model SP-414.

**AT RIGHT . . .**
bulky steel tanks are stockpiled in the yard of a welding plant by 15-ton Lorain-TL Self-Propelled crane, Model SP-254W.



## LORAINS ON RUBBER SAVE MONEY!

• Take a close look at the two photos. Both are yard storage operations of big, bulky materials. One yard has roadways paved with concrete. The other has winding dirt aisles in a weed-grown lot. One company is a giant automobile manufacturer — the second, a small welding plant.

• Mobile, rubber-tire Lorain Self-Propelled cranes are saving time and money for each of these plants, proof that *any* plant can cut costs and handle more materials the Lorain Crane way. Paved yards — or "back lot" — if material must be unloaded, loaded, stored or transported, a rubber-tire Lorain can fit your material handling problem.

• Savings start with men — one man at the controls of a Self-Propelled Lorain does the work of a crew; rubber-tire mobility takes the Lorain all over the yard quickly; air steering and air brakes add to ease of operation and maneuverability; 16 or more front-end lifting attachments handle any size, shape or type of material. Uses are unlimited — and there's a saving with every use!
*Ask your local Thew-Lorain Distributor for complete information.*

**THEW LORAIN**

**THE THEW SHOVEL CO., LORAIN, OHIO**

**SEMI-FINISHED PRODUCTS**
*(Billets)*

# MILD BESSEMER STRUCTURALS

*such as*

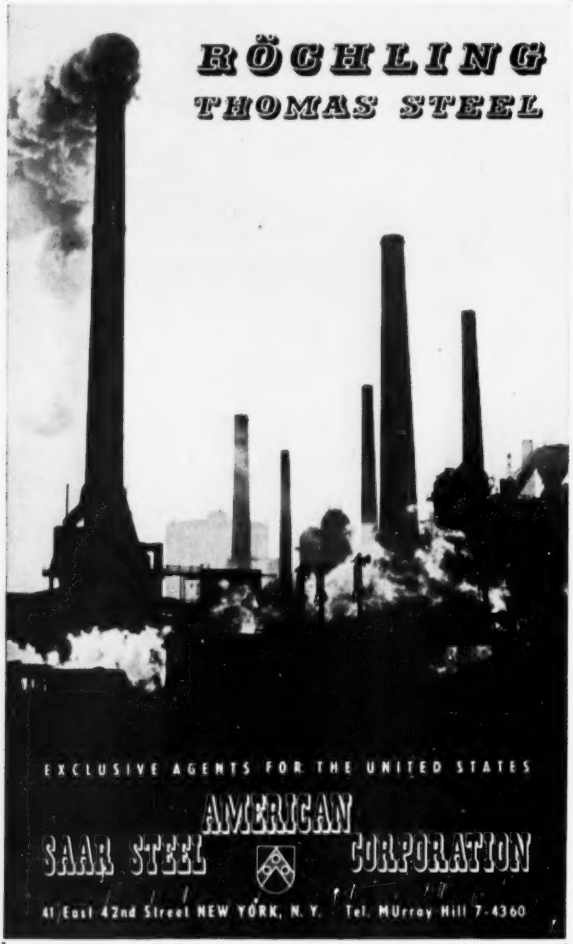
**FLATS, SQUARES, ROUNDS, ANGLES**

*also*

**WIRE RODS in various grades—and now, through the newly opened**

***SPECIAL STEEL DIVISION—***

- Free cutting steels hot and cold rolled
- Cold-finished steel shaftings
- Hot and cold rolled strip
- Stainless steels
- High carbon steels
- High and low alloy tool steels



**RÖCHLING**
**THOMAS STEEL**

EXCLUSIVE AGENTS FOR THE UNITED STATES

**AMERICAN SAAR STEEL CORPORATION**

41 East 42nd Street NEW YORK, N. Y. Tel. MUrray Hill 7-4360

AMERICAN SAAR STEEL CORP., 41 E. 42nd St., New York, N. Y.
Please send information and quotations for:

SIZES

Firm Att.

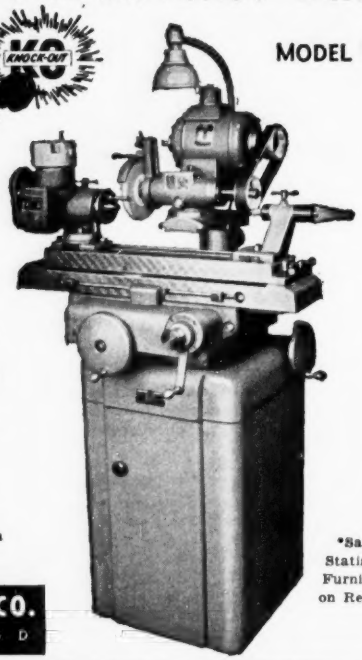
Address

City State

# There's a reason 76%*

**of all popularly-priced Tool and Cutter Grinders sold in 1952 were *"Knock-Outs"***

MODEL B860



Will do anything that machines costing 2 or 3 times more will do . . . yes and in less time.

Distributed Only Through Franchise Dealers

**K. O. LEE CO.**
ABERDEEN S D

*Sales Statistics Furnished on Request

**famous** for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

**THE EASTERN MACHINE SCREW CORP.**, 22-42 Barclay Street, New Haven, Conn.
Pacific Coast Representative: *A. C. Berbringer, 334 N. San Pedro St., Los Angeles, California.* Canada: *F. P. Barber Machinery Co., Toronto, Canada.*

**OHIO LOCOMOTIVE CRANES**

**25 TO 50 TON CAPACITY**

**DIESEL • GASOLINE • ELECTRIC • STEAM**

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

mechanical
# POWER PRESSES
FOR
# ALL INDUSTRIES

# ZEH & HAHNEMANN CO.

56 AVENUE A, NEWARK 5, N. J.

(*Continued from Page 224*)

expressed that a rise in borrowing rates may send some of these into temporary suspension.

**Boston**—Fill-in lots of structural steel are short, notably wide-flanged beams, and more premium and foreign steel is being bought. Larger shops are heavily extended on girder work and are pressing for plate tonnage. Over-all inventories with district shops are fairly substantial, but lack balance.

**New York**—While there is a fair scattering of miscellaneous commercial work being figured and placed, public demand, particularly bridge demand, continues to dominate the field. Possibly the largest bridge award recently involves 2475 tons for a thruway job in Ulster county, New York.

**Cleveland**—New list of extras on standard structural shapes, hot-rolled carbon steel, has just been issued by Republic Steel Corp. The new schedule, effective May 20, replaces one in effect since Dec. 23, 1949.

**San Francisco**—Bethlehem Pacific Coast Steel Corp. has been awarded the contract to fabricate and erect the structural steelwork for Ford Motor Co.'s $50 million passenger and truck assembly plant near Milpitas, 50 miles from San Francisco. Erection of steel will begin in the fall.

## Iron Ore . . .

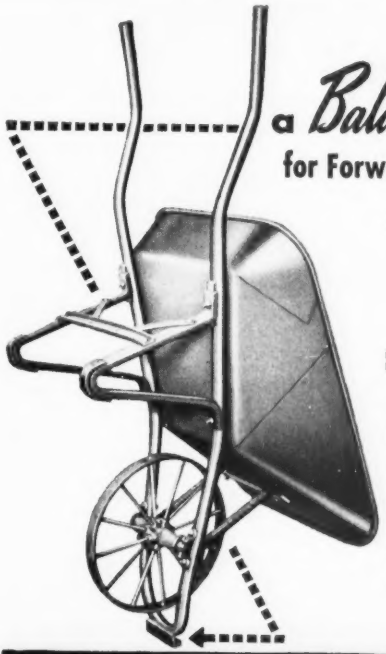
Iron Ore Prices, Page 229

**Cleveland**—The Great Lakes fleet is hauling ore in record-breaking volume. In the week ended May 18 movement totaled 3,162,887 tons, bettering that of the preceding week by 673,085 tons, and that of the like week of 1952 by 319,854 tons.

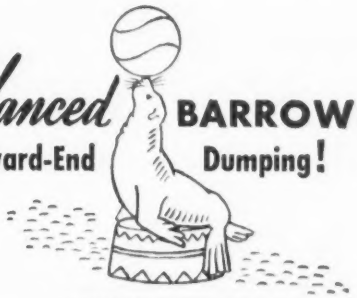
Total shipments in the season to date are 16,182,582 tons, according to the Lake Superior Iron Ore Association. This compares with 13,056,492 in the like period of last year.

Lake ore consumption totaled 7,675,323 gross tons in April. This was slightly less than in March but was more than 1 million tons above consumption in April, 1952. To date this year the furnaces have consumed 31,621,214 tons, increase of 2,186,515 over use in the like period of last year.

Stocks of ore on Lake Erie docks and at furnaces at the beginning of May totaled 21,661,050 tons, and of the 204 blast furnaces depending principally on Lake Superior ore 191 were in blast compared with 173 on Apr. 1 and 87 a year ago.

a *Balanced* BARROW for Forward-End Dumping!



★ *REINFORCED* FOR HEAVY-DUTY SERVICE!

This Sterling Wheelbarrow has a reinforced tubular steel frame with special steel nose shoe. Provides perfect balance for forward end dumping and extra strength for heavy duty service. Rugged construction includes V-shaped tray braces and 12-spoked steel wheel. Ideal for wheeling sand, scrap, castings, coal and other heavy bulk materials. Can be furnished with pneumatic or zero pressure wheel. Prompt shipment.

*Write for literature.*

Sterling FOUNDRY EQUIPMENT

STERLING WHEELBARROW COMPANY • MILWAUKEE 14, WIS., U. S. A.

A 5377-53

MINIMIZE YOUR "UPS" AND "DOWNS"

Those moves of material "up" — "down" — "in" — "out" — "across" and "back" can't be avoided — but their cost can be minimized.

It's largely a matter of proper selection of cranes, hoists, etc., as to type, construction, cost of operation, freedom from repairs, etc.

We've built these types of equipment for several decades but we are regarded by our customers as material handling "consultants." We'll welcome an opportunity to discuss your problems. Doubtless there's a Euclid crane or hoist to handle the situation in an ideal manner.

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THE EUCLID CRANE & HOIST COMPANY
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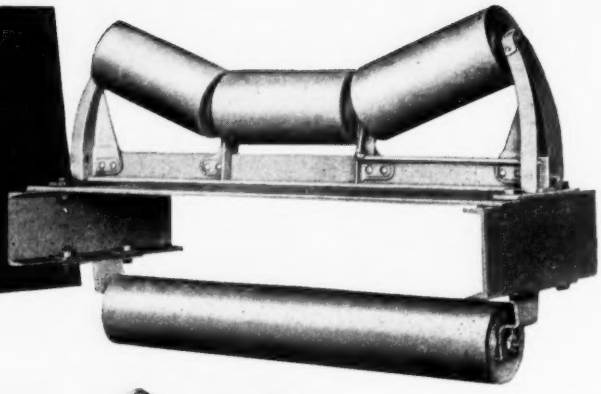
EUCLID CRANES AND HOISTS Raise Profits

# LINK-BELT IDLERS



## ...the long-life answer to higher belt conveyor efficiency

WHEN your materials move on Link-Belt roller bearing idlers, you're assured of free-rolling efficiency. And because friction loss is minimized, they require less power to operate. You'll like their low maintenance, too. Grease-in-dirt-out seals preserve lubricant. Dozens of other design features promote long life.

Choose from a full line of 20° and 45° troughing idlers in a variety of styles. Belt-training and flat belt idlers are also furnished in a wide range of roll diameters and belt widths. See your nearby Link-Belt sales representative or distributor for new Book 2416.

Series "100" troughed rubber cushion idler.

Series "100" troughed belt-training idler, positive action type.

**LINK-BELT**

ROLLER BEARING IDLERS

**LINK-BELT COMPANY:** Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, Duluth 2, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Stores and Distributors in Principal Cities. 13,219

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# NOW with INCREASED DEMANDS for AUTOMOTIVE SCRAP

# OWEN GRAPPLES

are setting a feverish pace in the handling of this scrap iron from cars or trucks to baler and on to users.

Due to their unique and exclusive operating principle, OWEN Scrap Grapples reduce handling time and operating costs regardless of the shape, thickness, or size and weight of the automotive scrap.

Write for full particulars on the OWEN HI-SPEED SYSTEM.

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6012 BREAKWATER AVE. • CLEVELAND, OHIO
BRANCHES: New York, Philadelphia, Chicago, Berkeley, Calif.

OWEN NEW METHOD SCRAP HANDLING

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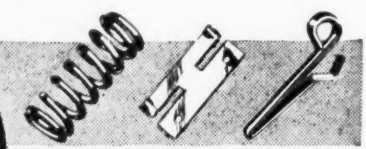
SPRINGS
STAMPINGS
WIRE FORMS



**M. D. Hubbard Spring Company**
604 CENTRAL AVE. PONTIAC, MICH.

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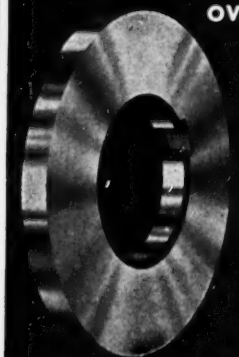
# COWLES

## GANG SLITTING KNIVES

OVER 30 YEARS EXPERIENCE



*Standard* for *Service* and *Durability*. Ground to extremely close Tolerances and Finish. Made by *Toolmakers.*

**COWLES TOOL COMPANY**
2086 W. 110th ST. CLEVELAND 2, OHIO

# ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in Italic.

## ORES

### Lake Superior Iron Ore

(Prices effective for ore delivered up to and including June 30, 1953; gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

| | |
|---|---|
| Old range bessemer | $10.10 |
| Old range nonbessemer | 9.95 |
| Mesabi bessemer | 9.85 |
| Mesabi nonbessemer | 9.70 |
| Open-hearth lump | 10.95 |
| High phosphorus | 9.70 |

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect on Dec. 31, 1952, and increases or decreases after such date are for buyer's account.

### Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract ..... 17.00-18.00

### Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

| | |
|---|---|
| Swedish basic, 60 to 68%: | |
| Spot | nom. |
| Long-term contract | 22.00 |
| North African hematites (spot) | 24.00-26.00 |
| Brazilian iron ore, 65-69% (spot) | 25.00 |

### Tungsten Ore

Net ton unit, duty paid

| | |
|---|---|
| Foreign wolframite and scheelite, per net ton unit | $55.00 |
| Domestic scheelite, mine | 62.00 |

### Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90c-95c.

### Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

*Indian and African*

| | |
|---|---|
| 48% 2.8:1 | $40.00-42.00 |
| 48% 3:1 | 44.00-46.00 |
| 48% no ratio | 32.00-34.00 |

*South African Transvaal*

| | |
|---|---|
| 44% no ratio | $27.00-28.00 |
| 43% no ratio | 34.00-35.00 |

*Brazilian*

| | |
|---|---|
| 44% 2.5:1 lump | nom. $32 |

*Domestic*

(Rail nearest seller)

| | |
|---|---|
| 48% 3:1 | $39.00 |

### Molybdenum

| | |
|---|---|
| Sulphide concentrates per lb. molybdenum content, mines | $1.00 |

## REFRACTORIES

### Fire Clay Brick

*High-Heat Duty*: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $99.30; Salina, Pa., $104.55; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

### Silica Brick

*Standard*: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $99.30; Hays, Pa., $105.10; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $109.70; Cutler, Utah, $116.55; Los Angeles, $122.85.

### Insulating Fire Brick

2300° *F*: Massillon, O., $178.50; Clearfield, Pa., $179.55; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

### Ladle Brick

*Dry Pressed*: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $69.30; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $92.40; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

### Sleeves

Reesdale, Pa., $127; Johnstown, Pa., $127.30; Clearfield, Pa., $135; St. Louis, $138; Athens, Tex., $149.90.

### Nozzles

Reesdale, Pa., $206.30; Johnstown, Pa. $208.40; Clearfield, Pa., $219.45; St. Louis, $224.65; Athens, Tex., $225.20.

### Runners

Reesdale, Pa., $158.20; Johnstown, Pa., $161.70; Clearfield, Pa., $168.60; St. Louis, $170.30; Athens, Tex., $174.40.

### High-Alumina Brick

50 *Per Cent*: Clearfield, Pa., St., Louis, Mexico, Mo., $166.30; Danville, Ill., $169.30.
60 *Per Cent*: St. Louis, Mexico, Vandalia, Mo., $210.20; Danville, Ill., $213.20.
70 *Per Cent*: St. Louis, Mexico, Vandalia, Mo., $244.85; Danville, Ill., $247.85; Clearfield, Pa., $252.

## METALLURGICAL COKE

Price per net ton

### Beehive Ovens

| | |
|---|---|
| Connellsville, furnace | $14.50-15.00 |
| Connellsville, foundry | 16.50-17.00 |
| New River foundry | 20.80 |
| Wise county foundry | 15.95 |
| Wise county, furnace | 15.20 |

### Oven Foundry Coke

| | |
|---|---|
| Kearney, N. J. ovens | $24.00 |
| Everett, Mass., ovens | |
| New England, del. | *26.00 |
| Chicago ovens | 24.50 |
| Chicago, del. | 26.00 |
| Terre Haute, ovens | 24.05 |
| Milwaukee, ovens | 25.25 |
| Indianapolis, ovens | 24.25 |
| Chicago, del. | 28.12 |
| Cincinnati, del. | 25.85 |
| Painesville, O., ovens | 25.50 |
| Cleveland, del. | 27.43 |
| Erie, Pa., ovens | 25.00 |
| Birmingham, ovens | 21.65 |
| Cincinnati, del. | 26.58 |
| LoneStar, Tex. ovens | 18.50 |
| Philadelphia, ovens | 23.95 |
| Swedeland, Pa., ovens | 23.85 |
| St. Louis, ovens | |
| St. Louis, del. | 26.00 |
| Portsmouth, O., ovens | 24.00 |
| Cincinnati, del. | 26.62 |
| Detroit, ovens | 25.50 |
| Detroit, del. | 26.50 |
| Buffalo, del. | 28.08 |
| Flint, del. | 28.23 |
| Pontiac, del. | 27.06 |
| Saginaw, del. | 28.58 |

*Or within $4.55 freight zone from works.

## COAL CHEMICALS

Spot, cents per gallon, ovens

| | |
|---|---|
| Pure benzol | 36.00 |
| Toluol, one deg. | 30.00-33.00 |
| Industrial xylol | 30.00-33.50 |

Per ton, bulk, ovens

| | |
|---|---|
| Sulphate of ammonia | $44-45 |
| Birmingham area | $49.50 |

Cents per pound, ovens

| | |
|---|---|
| Phenol, 40 (carlots, nonreturnable drums) | 17.25 |

## FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective $CaF_2$ content 72.5%, $44; 70%, $42.50; 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $35-$36.


UPSON-WALTON wire rope

**Engineered for safety**

In making Upson-Walton extra flexible crane rope, materials and manufacturing practices meet exacting specifications. Slings are factory assembled from Upson-Walton wire rope and Upson-Walton fittings.

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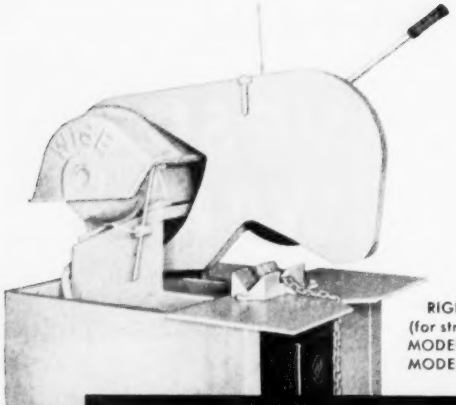
WIRE ROPE • FITTINGS • TACKLE BLOCKS
*Established 1871*



RIGHT ANGLE
(for straight cuts)
MODEL 75-10 RA
MODEL 10-15 RA

# WISE ABRASIVE CUT-OFF SAWS

## *Give you* FASTER CUTS *with* MAXIMUM WHEEL LIFE

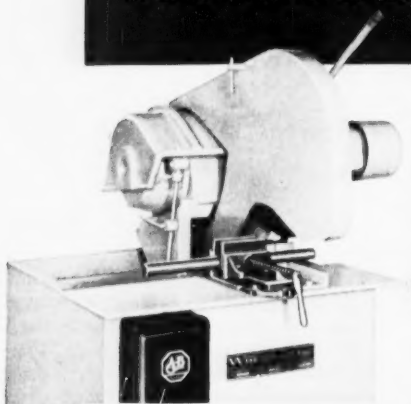
**GREATER POWER IS THE SECRET**

Wise saws are *power packed* with 7½ or 10 h.p. *HEAVY DUTY* motors. This permits faster cuts with extra hard 18" or 20" wheels. These wheels last longer and, in turn, produce more cuts per wheel dollar!

Wise saws also cost less than similar capacity saws—*much less!* Construction throughout is heavy duty. Designed to meet the needs of all industries. New safety guard is unmatched. Number 2 Magnetic Starter is standard equipment.

**RIGHT ANGLE OR SWING HEAD TYPES**

Both saws have the same outstanding construction and power features. WILL CUT UP TO 6" PIPE AND 8" CHANNEL IN ONLY A MATTER OF SECONDS!



SWING HEAD
(head swings for 90° to 45° mitre cuts)
MODEL 75-10 SH
MODEL 10-15 SH

**Write for free descriptive folder No. WS-1000-4. Provides valuable data on recommended wheel grades for different types of cutting.**

**HENRY H. WISE CO.**
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**312 Pages**
**Price Postpaid $4.50**

Covers every angle of the design, construction and operation of the steel rolling mill.

**THE PENTON PUBLISHING CO.**
**Book Department, 1213 W. 3rd St., Cleveland 13, O.**

## Reinforcing Bars . . .

Reinforcing Bar Prices, Page 208

**Seattle** — Rolling mill operations are at capacity. Jobs of less than 100 tons are numerous. Bethlehem Pacific Coast Steel Corp., Seattle, has taken 1200 tons for the Army indoctrination center, Big Delta, Alaska.

## Pig Iron . . .

Pig Iron Prices, Page 204

**Philadelphia** — District pig iron consumers cannot get all the iron they require from eastern Pennsylvania furnaces, but can readily round out their requirements by getting supplemental tonnage from other areas.

Some Delaware river shops in the Philadelphia area are now able to get southern iron at a lower cost than heretofore as result of the new all-rail rate from Birmingham of $11.54, including federal tax, effective May 15. Previously the rate was $17.58, which they had to pay for southern iron, because they could not buy in sufficiently large quantities to take advantage of combination rail-water rates involving the use of barges.

The new all-rail rate was authorized to make it competitive with the combination rail-water rate to foundries up the Delaware river as far as Burlington, N. J., and Florence, N. J., and to apply to points as far down the river as Wilmington, Del., inclusive. The new schedule brings the all-rail delivered price on No. 2 foundry iron at Philadelphia down to within around $2 of the delivered prices of the eastern Pennsylvania furnaces.

**Cleveland**—With merchant pig iron supplies adequate to meet current melting requirements demand pressure is easier. Sellers are disposing of their output, but they are seeking business more aggressively than for a long time past. Spotty foundry operations contribute to sluggish buying, with the foundries disinclined to order heavily for inventory.

**Boston**—Pig iron inventories at the current rate of operation are satisfactory. Shipments approximate the melt. This trend is expected over the next few months with some letdown for vacations.

**New York**—District pig iron consumers report adequate supply. Only in a few cases do buyers have difficulty getting all the tonnage they need from regular sources. This easy situation is ascribed primarily to the fact operations at most gray iron shops in this area are lagging, with raw material inventories in good shape.

**Youngstown**—No. 4 blast furnace at U. S. Steel's Ohio Works will be blown out June 1 for relining. The furnace, a 900-ton unit, will be idle for about five weeks.

**Cincinnati**—Pig iron demand in this district is stable. Shipments are steady. Machine tool foundries are busy while those foundries supplying castings to agricultural equipment makers are finding business off. The shortage of silvery iron due to the Jackson, O., strike continues.

**Chicago** — Automotive need for castings is keeping gray iron foundries operating at a good clip. Other fields are active too, but to a less degree and most jobbing shops could handle more volume. Pig iron supply matches present requirements.

## Canada . . .

**Toronto, Ont.**—Production of iron and steel in Canada is running ahead of the 1952 record. March pig iron output was 238,572 net tons, comparing with 225,182 in February and with 240,755 in March, 1952.

In the first three months this year pig iron production totaled 708,360

WARD STEEL CO.
We specialize in FINISHED STEEL BARS—TUBES—STRIP
PROMPT WAREHOUSE SERVICE ONLY
Most Complete Stock in America of BLUE TEMPERED SPRING STEEL
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# IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

## STEELMAKING SCRAP COMPOSITE

| | |
|---|---|
| May 21 | $39.00 |
| May 14 | 38.83 |
| Apr. avg. | 43.05 |
| May 1952 | 43.00 |
| May 1948 | 40.67 |

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

### PITTSBURGH

(Delivered consumer plant)

| | |
|---|---|
| No. 1 heavy melting | 39.00-40.00 |
| *No. 2 heavy melting* | *34.00-35.00* |
| No. 1 bundles | 39.00-40.00 |
| No. 2 bundles | 31.00-32.00 |
| No. 1 busheling | 39.00-40.00 |
| Machine shop turnings | 26.50-27.00 |
| Mixed borings, turnings | 26.50-27.00 |
| Short shovel turnings | 30.00-31.00 |
| Cast iron borings | 29.00-30.00 |
| Cut structurals | 45.00-46.00 |
| Heavy turnings | 41.00-42.00 |
| *Punchings & plate scrap* | *47.00-48.00* |
| Electric furnace bundles | 46.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 39.00-40.00 |
| *Charging box cast* | *35.00-36.00* |
| Heavy breakable cast | 37.00-38.00 |
| Unstripped motor blocks | 35.00-36.00 |
| No. 1 machinery cast | 49.00-50.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 45.25-46.25 |
| *Rails, 2-ft. and under* | *50.00-51.00* |
| *Rails, 18-in. and under* | *51.00-52.00* |
| *Rails, random lengths* | *45.00-46.00* |
| *Railroad specialties* | *45.00-46.00* |

### CLEVELAND

(Delivered consumer plant)

| | |
|---|---|
| No. 1 heavy melting | 39.00 |
| No. 2 heavy melting | 34.00-34.50 |
| No. 1 bundles | 39.00-40.00 |
| No. 2 bundles | 32.00-33.00 |
| No. 1 busheling | 38.00-39.00 |
| Machine shop turnings | 22.00-23.00 |
| *Mixed borings, turnings* | *26.00-27.00* |
| *Short shovel turnings* | *26.00-27.00* |
| *Cast iron borings* | *26.00-27.00* |
| Low phos. | 43.00-44.00 |
| Alloy free, short shovel turnings | 30.00-31.00 |
| Electric furnace bundles | 41.00-42.00 |

Cast Iron Grades

| | |
|---|---|
| *No. 1 cupola* | *43.50-44.00* |
| *Charging box cast* | *42.00-43.00* |
| *Stove plate* | *42.00-43.00* |
| *Heavy breakable cast* | *37.00-38.00* |
| Unstripped motor blocks | 27.00-28.00 |
| *Brake shoes* | *36.00-37.00* |
| *Clean auto cast* | *45.00-46.00* |
| No. 1 wheels | 40.00-41.00 |
| *Burnt cast* | *35.00-36.00* |
| *Drop broken machinery* | *43.00-45.00* |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 46.00-47.00 |
| R.R. Malleable | 49.00-50.00 |
| Rails, 3-ft. and under | 52.00-53.00 |
| Rails, 18-in. and under | 55.00-56.00 |
| Rails, random lengths | 48.00-49.00 |
| Cast steel | 49.00-50.00 |
| Railroad specialties | 50.00-51.00 |
| Uncut tires | 49.00-50.00 |
| Angles, splice bars | 52.00-53.00 |
| Rails, rerolling | 53.00-54.00 |

### YOUNGSTOWN

(Delivered consumer plant)

| | |
|---|---|
| No. 1 heavy melting | 41.00-42.00 |
| No. 2 heavy melting | 34.00-35.00 |
| No. 1 bundles | 41.00-42.00 |
| No. 2 bundles | 33.00-34.00 |
| Machine shop turnings | 22.00-23.00 |
| *Short shovel turnings* | *27.00-28.00* |
| *Cast iron borings* | *27.00-28.00* |
| Low phos. | 47.00-48.00 |
| Electric furnace bundles | 42.00-43.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 46.00-47.00 |

### PHILADELPHIA

(Delivered consumer plant)

| | |
|---|---|
| *No. 1 heavy melting* | *41.00-42.00* |
| *No. 2 heavy melting* | *37.00-38.00* |
| *No. 1 bundles* | *41.00-42.00* |
| *No. 2 bundles* | *Nominal* |
| *No. 1 busheling* | *41.00-42.00* |
| Machine shop turnings | 27.00-28.00 |
| Mixed borings, turnings | 32.00 |
| Short shovel turnings | 33.00 |
| *Structurals & Plate* | *45.00-46.00* |
| Heavy turnings | 39.50-40.50 |
| Couplers, springs, wheels | 50.00 |

Cast Iron Grades

| | |
|---|---|
| *No. 1 cupola* | *39.00* |
| Charging box cast | 40.00 |
| Heavy breakable cast | 43.00 |
| *Unstripped motor blocks* | *29.00-30.00* |
| Drop broken machinery | 47.00-48.00 |

### NEW YORK

(Brokers' Buying Prices)

| | |
|---|---|
| *No. 1 heavy melting* | *33.00-34.00* |
| *No. 2 heavy melting* | *29.00-30.00* |
| *No. 2 bundles* | *27.00-28.00* |
| *Machine shop turnings* | *17.00-19.00* |
| *Mixed borings, short turnings* | *22.00-23.00* |
| Low phos. (structural & plate) | 37.00-38.00 |
| Shovel turnings | 22.50-23.50 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 33.00-34.00 |
| Unstripped motor blocks | 22.50-23.00 |

### DETROIT

| | |
|---|---|
| *No. 1 heavy melting* | *31.00-32.00* |
| *No. 2 heavy melting* | *26.00-27.00* |
| No. 1 bundles | 37.00-38.00 |
| No. 2 bundles | 23.00-24.00 |
| *No. 1 busheling* | *36.00-37.00* |
| *Machine shop turnings* | *14.00-15.00* |
| *Mixed borings, turnings* | *14.00-15.00* |
| *Short shovel turnings* | *18.00-19.00* |
| Punchings & plate scrap | 40.00-41.00 |

Cast Iron Grades

| | |
|---|---|
| *No. 1 cupola* | *45.00* |
| *Charging box cast* | *37.00-38.00* |
| *Stove plate* | *37.00-38.00* |
| Heavy breakable | 29.00-30.00 |
| Unstripped motor blocks | 30.00 |
| Clean auto cast | 42.00-43.00 |
| *Malleable* | *46.00* |

### CINCINNATI

(Delivered consumer plant)

| | |
|---|---|
| No. 1 heavy melting | 41.00 |
| No. 2 heavy melting | 37.00 |
| No. 1 bundles | 41.00 |
| No. 2 bundles | 34.00 |
| No. 1 busheling | 41.00 |
| *Machine shop turnings* | *22.00* |
| *Mixed borings, turnings* | *24.00•* |
| Short shovel turnings | 26.00• |
| *Cast iron borings* | *24.00•* |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 43.00 |
| Charging box cast | 38.00 |
| Stove plate | 29.00• |
| Burnt cast | 29.00• |
| Heavy breakable cast | 37.00• |
| Unstripped motor blocks | 30.00 |
| Brake shoes | 29.00• |
| Clean auto cast | 38.00 |
| Drop broken machinery | 48.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 42.00 |
| Malleable | 45.00 |
| Rails, 18-in. and under | 53.00 |
| *Rails, random lengths* | *45.00* |

•F.o.b. shipping point.

### CHICAGO

| | |
|---|---|
| No. 1 heavy melting | 35.00-37.00 |
| No. 2 heavy melting | 33.00-35.00 |
| No. 1 factory bundles | 37.00-39.00 |
| No. 1 dealer bundles | 35.00-37.00 |
| *No. 2 bundles* | *28.00-30.00* |
| No. 1 busheling | 35.00-37.00 |
| Machine shop turnings | 17.00-19.00 |
| Mixed borings, turnings | 17.00-19.00 |
| Short shovel turnings | 18.00-20.00 |
| Cast iron borings | 17.00-19.00 |
| *Cut structurals* | *40.00-42.00* |
| *Electric furnace bundles* | *39.00-40.00* |

Cast Iron Grades

| | |
|---|---|
| *No. 1 cupola* | *39.00-40.00* |
| Stove plate | 32.00-34.00 |
| Unstripped motor blocks | 35.00-37.00 |
| *Clean auto cast* | *40.00-42.00* |
| *Drop broken machinery* | *42.00-43.00* |

Railroad Scrap

| | |
|---|---|
| *No. 1 R.R. heavy melt.* | *41.00-43.00* |
| *R.R. Malleable* | *39.00-41.00* |
| Rails, 2-ft. and under | 50.00-52.00 |
| Rails, 18-in. and under | 52.00-54.00 |
| Angles, splice bars | 47.00-49.00 |
| Rails, rerolling | 47.00-48.00 |

### BIRMINGHAM

| | |
|---|---|
| No. 1 heavy melting | 29.50-30.50 |
| No. 2 heavy melting | 27.00-28.00 |
| No. 1 bundles | 29.50-30.50 |
| No. 2 bundles | 25.00-26.00 |
| Machine shop turnings | 20.75-21.75 |
| Short shovel turnings | 22.75-23.75 |
| Cast iron borings | 22.75-23.75 |
| Cut structurals | 39.00-40.00 |
| Electric furnace bundles | 32.00-33.00 |

Cast Iron Grades (F.o.b. Shipping Point)

| | |
|---|---|
| No. 1 cupola | 38.00-39.00 |
| Charging box cast | 30.00-31.00 |
| Stove plate | 34.00-35.00 |
| Heavy breakable cast | 30.00-31.00 |
| Unstripped motor blocks | 34.00-35.00 |
| No. 1 wheels | 46.00-47.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 35.00-36.00 |
| Rails, 2-ft. and under | 45.00-46.00 |
| Rails, random lengths | 42.00-43.00 |
| Angles, splice bars | 45.00-46.00 |
| Rails, rerolling | 45.00-46.00 |

### ST. LOUIS

(Brokers' Buying Prices)

| | |
|---|---|
| No. 1 heavy melting | 32.00 |
| No. 2 heavy melting | 32.00 |
| No. 1 bundles | 33.00 |
| No. 2 bundles | 30.00 |
| Machine shop turnings | 18.00 |
| Short shovel turnings | 20.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 41.00-42.00 |
| Charging box cast | 34.00-35.00 |
| Heavy breakable cast | 30.00-32.00 |
| Unstripped motor blocks | 30.00-31.00 |
| Brake shoes | 41.00 |
| Clean auto cast | 44.00 |
| Burnt cast | 37.00-39.00 |

Railroad Scrap

| | |
|---|---|
| Malleable | 36.00 |
| Rails, 18-in. and under | 53.00-54.00 |
| Rails, random lengths | 39.00-40.00 |
| Uncut tires | 44.00 |
| Angles, splice cars | 47.00-48.00 |
| Rails, rerolling | 45.00 |

### BUFFALO

| | |
|---|---|
| No. 1 heavy melting | 41.50-42.00 |
| No. 2 heavy melting | 39.00-39.50 |
| No. 2 bundles | 37.00-37.50 |
| No. 1 bundles | 42.00-43.00 |
| No. 1 busheling | 42.00-43.00 |
| Machine shop turnings | 24.50-25.00 |
| Mixed borings, turnings | 31.00-31.50 |
| Short shovel turnings | 32.00-32.50 |
| Low phos. | 43.50-44.00 |

Cast Iron Grades (F.o.b. Shipping Point)

| | |
|---|---|
| No. 1 cupola | 40.50-41.50 |
| No. 1 machinery | 44.50-45.00 |

Railroad Scrap

| | |
|---|---|
| Rails, random lengths | 46.00-47.00 |
| Rails, 2 ft. and under | 52.00-53.00 |

### BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

| | |
|---|---|
| *No. 1 heavy melting* | *30.00-31.00* |
| *No. 2 heavy melting* | *25.00-26.00* |
| *No. 1 bundles* | *30.00-31.00* |
| *No. 2 bundles* | *22.00-23.00* |
| *Machine shop turnings* | *17.00-17.50* |
| *Mixed borings, turnings* | *19.00-20.00* |
| *Short shovel turnings* | *19.50-20.50* |
| No. 1 cast | 34.00-35.00 |
| Mixed cupola cast | 32.00-33.00 |
| *No. 1 machinery cast* | *43.00-44.00* |

### SEATTLE

(Delivered consumer plant)

| | |
|---|---|
| No. 1 heavy melting | 33.00 |
| No. 2 heavy melting | 29.00 |
| No. 1 bundles | 32.00 |
| No. 2 bundles | 26.00 |
| No. 3 bundles | 22.00 |
| Machine shop turnings | 15.00 |
| Mixed borings, turnings | 15.00 |
| Short shovel turnings | 15.00 |
| Electric furnace, No. 1 | 40.00-41.00 |

Cast Iron Grades (F.o.b. Shipping Point)

| | |
|---|---|
| No. 1 cupola | 40.00 |
| Heavy breakable cast | 36.00-38.00 |
| Unstripped motor blocks | 29.00 |
| No. 1 wheels | 38.00-40.00 |

Railroad Scrap

| | |
|---|---|
| Rails, random lengths | 38.00 |

### SAN FRANCISCO

| | |
|---|---|
| No. 1 heavy melting | 29.00 |
| No. 2 heavy melting | 25.00 |
| No. 1 bundles | 26.00 |
| No. 2 bundles | 23.00 |
| No. 1 busheling | 29.00 |
| Machine shop turnings | 11.00 |
| Mixed borings, turnings | 29.00 |
| Short shovel turnings | 29.00 |
| Cast iron borings | 29.00 |
| Cut structurals | 38.00 |
| Heavy turnings | 34.00 |
| Punchings & plate scrap | 37.50 |
| Electric furnace bundles | 37.00 |

Cast Iron Grades

| | |
|---|---|
| No. 1 cupola | 40.00 |
| Charging box cast | 47.00 |
| Stove plate | 46.00 |
| Heavy breakable cast | 45.00 |
| Unstripped motor blocks | 41.00 |
| Brake shoes | 41.00 |
| Clean auto cast | 52.00 |
| No. 1 wheels | 47.00 |
| Burnt cast | 41.00 |
| Drop broken machinery | 52.00 |

Railroad Scrap

| | |
|---|---|
| No. 1 R.R. heavy melt. | 37.00 |
| Malleable | 55.00 |
| Rails, 3-ft. and under | 42.00 |
| Rails, 18-in. and under | 45.00 |
| Rails, random lengths | 39.00 |
| Cast steel | 40.00 |
| Uncut tires | 39.00 |
| Angles, splice bars | 42.00 |
| Rails, rerolling | 44.00 |

### LOS ANGELES

| | |
|---|---|
| *No. 1 heavy melting* | *28.00* |
| *No. 2 heavy melting* | *20.00* |
| *No. 1 bundles* | *25.00* |
| *No. 2 bundles* | *20.00* |
| *Machine shop turnings* | *10.00* |

Cast Iron Grades (F.o.b. Shipping Point)

| | |
|---|---|
| *No. 1 cupola* | *40.00-43.00* |

### HAMILTON, ONT.

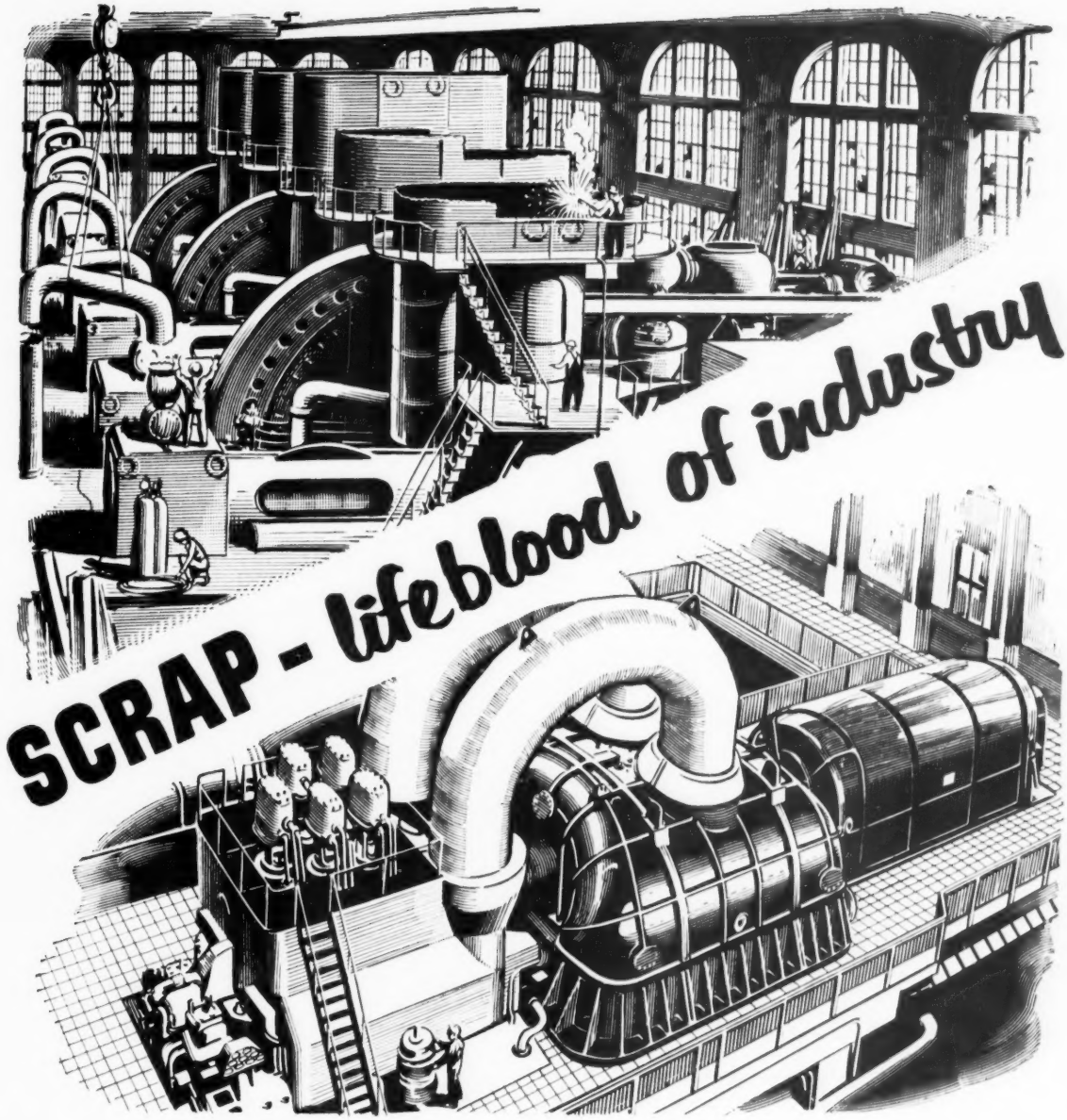
(Delivered Prices)

| | |
|---|---|
| Heavy Melt. | $35.50 |
| No. 1 Bundles | 35.50 |
| No. 2 Bundles | 35.50 |
| Mechanical Bundles | 31.50 |
| Mixed Steel Scrap | 31.50 |
| Mixed Borings, Turnings | 28.50 |
| Rails, Remelting | 35.50 |
| Rails, Rerolling | 38.50 |
| Busheling | 28.00 |
| Busheling new factory: Prep'd | 33.50 |
| Unprep'd | 31.50 |
| Short Steel Turnings | 28.50 |

Cast Iron Grades

| | |
|---|---|
| No. 1 Machinery Cast | 50.00 |

† F.o.b., shipping point.

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SAN FRANCISCO, CAL.

## LEADERS IN IRON AND STEEL SCRAP SINCE 1889

net tons against 649,070 tons in the like 1952 period.

Production of steel ingots and castings for March amounted to 366,974 tons comparing with 326,063 for February and with 339,396 for March, 1952.

In the three months ended Mar. 31, production of steel ingots and castings totaled 1,039,685 net tons and compared with 962,295 net tons in the 1952 period.

## Scrap . . .

Scrap Prices, Page 232

**Cleveland** — Although the scrap market continues extremely sluggish the downtrend in prices, under way for more than a month, appears to be slowing up. There is no convincing explanation for this apparent leveling out since the mills are not buying to any appreciable extent and have not yet indicated just what they plan for June. Some market authorities think the possibility of a steel strike this summer is a factor holding back mill purchases.

Last week the chief steelmaking grades held unchanged with No. 1 heavy melting pegged around $39. Mixed borings and turnings, short shovel turnings and cast iron borings are off about $2 per ton to a range of $26 to $27. Easiness also is evident in the cast grades.

**Philadelphia**—Top grades of open-hearth scrap are slightly firmer, with No. 1 heavy melting, No. 1 bundles and No. 1 busheling now holding at $41 to $42 delivered. No. 2 heavy melting is on the easy side at $37 to $38. Little or no trading is noted in No. 2 bundles, with the market purely nominal.

Structurals and plate are slightly easier at $45 to $46 delivered. Machine shop turnings, mixed borings and turnings, short shovel turnings and heavy turnings prices are unchanged; also couplers, springs and wheels. No. 1 cupola cast is softer at $39 delivered and unstripped motor blocks at $29 to $30. Other cast grades are unchanged.

**Pittsburgh** — Some new activity may be in the offing for the sluggish scrap market. The district's largest consumer is releasing scheduled shipments held up for six weeks or more. Another mill has announced it will take shipments on a scheduled basis for June.

**Boston**—While there is limited buying at the lower price levels, consumers of steelmaking grades conjecture as to likelihood of stabilization near present costs. With inventories in good shape and operations due to decline in July, consumers are taking a waiting stand.

**New York**—Brokers have reduced buying prices on No. 1 heavy melting steel to $33 to $34, and on No. 2 heavy melting to $29 to $30. Also they have dropped prices on No. 2 bundles to $27 to $28 with some offering still less.

**Detroit** — Buying by Great Lakes Steel, Rotary Electric, McClouth and Ford last week, though light, served to crystallize scrap prices at going levels. Most trade observers feel that prices now will hold at substantially unchanged levels until early next month.

**Cincinnati**—The scrap market here appears a little more stable. Further declines were posted last week in borings and turnings but the market held steady for the most part.

**Chicago**—Scrap market activity in this area continues in the doldrums. Consumer purchases are so light their influence in setting the price pattern is indistinct. Generally, the market shows a gently declining price trend.

**St. Louis**—Scrap buying is at virtual standstill. Prices are unchanged. Low quotations have resulted in a noticeable drying up of shipments from rural areas.

**Los Angeles**—With the drop in prices ranging from $2 to $4 the steelmaking scrap market is sluggish. Movement of scrap has virtually ceased and collections are reduced over 50 per cent. No. 2 heavy melting and No. 2 bundles are each down $4 to $20. No. 1 heavy melting was reduced $2 to $28, and No. 1 bundles are down $4 to $25.

**San Francisco** — Cast grades of scrap are firm in price. Foundries have been working with low inventories which accounts for steady demand. Steel grades are holding.

**Seattle**—In anticipation of a possible steel strike, scrap buyers are not making commitments beyond June. Consequently the market is quiet.

## STRUCTURAL SHAPES . . .

### STRUCTURAL STEEL PLACED

2475 tons, bridge work, state thruway, Ulster county, New York, through A. E. Ottaviano Inc., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

2100 tons, Mannheim road overpass over Proviso freight yard of Chicago & North Western railroad, Cook county, for state of Illinois, to Mississippi Valley Structural Steel Co., St. Louis; Thomas McQueen Co., Forest Park, Ill., contractor.

1445 tons, office building addition, Acacia Life Insurance Co., Washington, D. C., through Turner Construction Co., to Belmont Iron Works, Eddystone, Pa.

900 tons, bridge, Coosa river, Gadsden, Ala., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through C. F. Rule Construction Co., Nashville, Tenn., general contractor.

500 tons, bridge, Norwich, Conn., to Harris Structural Steel Co., New York; Jones Con-


**CIMCO MACHINE TOOLS AT BARGAIN PRICES**

Niles 36-44 Vertical Boring Mill.
King 42" Vertical Boring Mill, 2 heads.
Niles 42"-50" Driving Box Borer, Burnisher and Facer, late type.
Cincinnati #3 Hi-Power, Vertical Miller.
Hall Planetary Style D Miller.
Gould & Eberhardt 96 H Hobber.
Heald #50 Internal Grinder.
Norton 10 x 24 Hydraulic Surface Grinder.
Sellers 4T Tool Grinder, motor drive.
Sellers 6T Tool Grinder, late type.
Norton 12 x 48 Hydraulic Universal Cylindrical Grinder.
Brown & Sharpe #12 Plain Grinder, reversing mechanism.
Heald 72A3 Sizematic Hydraulic Grinder.
Heald #70A Internal Grinder.
Heald #78 Centerless Internal & Cylindrical Grinder, late type, complete.
Heald 42 Borematic.
Jones & Lamson 8 x 31 Thread Grinder.
Heald 72-A3 Plain Internal Grinder.
Lodge & Shipley 16" x 6' single pulley drive, 12 spindle speeds.
American 16" x 8', 3 SCD, 56" center distance, 1¾" hole in spindle.
Blount Model B-3 Special Application Lathe for Turning, 20" swing, 2½" hole in spindle, 54" centers.
Gould & Eberhardt 16" Back Geared Shaper.
Gould & Eberhardt 24" Back Geared Shaper.
Gould & Eberhardt 28" Shaper, gear box.
Smith & Mills 32" Shaper, gear box.
Fellows 725 Gear Shaper with Spur Guide.
Fellows 612 Spur Gear Shaper.
Brown & Sharpe 3-26 Gear Cutter.
Oliver Template Tool Bit Grinder.
Lodge & Shipley 16" x 126" centers G.H. Lathe, Timken bearing, complete with taper attachment, late type.
Niles 48" x 48" x 16' Double Housing Planer, 4 heads, box table, DC reversible drive.
Landis 26" x 168" Plain Cylindrical Grinder.
American 30" x 14' G.H. Lathe, 12 speed.
Monarch 24" x 12' G.H. Lathe, complete with 22" 4 jaw chuck and taper attachment.
Bliss #58 Drawing Press, 5" stroke.
Cincinnati #2 Centerless Grinder.
American 4'11" column Triple Purpose radial drill, motor driven thru Turner gear box on arm.
Hanchett No. 600-86" UK Traveling Wheel Face Grinder, new 1946, table 72" x 86" long, 100 HP grinding wheel motor.
Baker #217 Upright Drill Press.
Gisholt 1L Saddle Type Turret Lathe, with bar feed, late type.
Milwaukee 2HL Plain Miller, late type.
LeBlond #2 Tool&Cutter Grinder, late.
Brown & Sharpe 3A Univ. Miller.
Marvel 9A Hack Saw, late type.

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**Box,** Double Sheathed, 50-Ton Capacity
**Box,** Single Sheathed, 50-Ton Capacity
**Flat,** 50-Ton, Steel Underframe, 40'6" Long
**Gondolas,** Composite, or All Steel 50-Ton and 70-Ton
**Hoppers,** Twin, All-Steel, 50-Ton, *Cross Dump*
**Ore Hoppers,** All-Steel, 50-Ton, Heavy Duty
**Tank,** 3,000-Gallon, High Pressure
**Tank,** 8,000-Gallon, Coiled and Non-Coiled

***Hoppers, All-Steel, 70-ton, Triple Hopper Cross Dump***

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(Send for list of other Presses and Metal Working Mach.)
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For Sale
**BLISS HIGH PROD. PRESSES**
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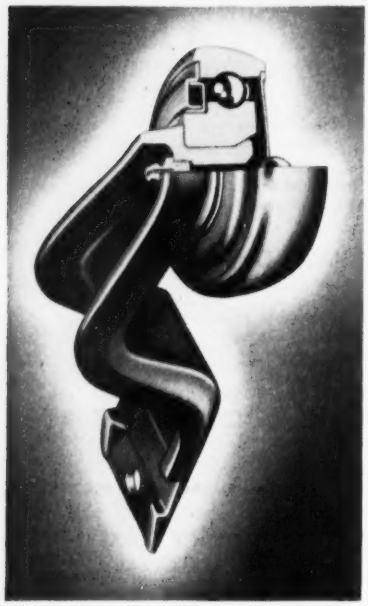

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*Mathews Conveyer Company West Coast San Carlos, California*
CANADIAN DIVISION
*Mathews Conveyer Company, Ltd., Port Hope, Ont.*


struction Co., Columbia, Conn., general contractor; previously reported to another shop.

405 tons, paper storage building, Dayton, O., through Lockwood Green & Co., New York, to Burger Iron Works, Dayton.

835 tons, garage for Trustees of Columbia, Duane street, New York city, to Bethlehem Steel Co., Bethlehem, Pa.

365 tons, power plant addition, naval shipyard, Boston, to Waghorne-Brown Co., (Bethlehem Fabricators, Inc.) Boston; Platt Construction Co., Inc., Cambridge, general contractor; 50 tons, reinforcing to Joseph T. Ryerson & Son, Inc., Cambridge.

300 tons, plant addition, Colgate-Palmolive-Peet Co., Jersey City, N. J., through George A. Fuller, New York, to Lafayette Iron Works, Jersey City, N. J.

190 tons, platform supports, for Electro Metallurgical Sales Co., Marietta, O., to Bethlehem Steel Co., Bethlehem, Pa.

185 tons, Central High School, Verona, N. Y., through Consolidated Constructors Inc., to Utica Steam Boiler Co., Utica, N. Y.

110 tons, New Jersey approach work to George Washington bridge, New York, through Grow Construction Co., that city, general contractor, to Schacht Steel Construction Co. Inc., also of New York.

### STRUCTURAL STEEL PENDING

5000 tons, including 1500 tons doors, Fairchild hangar, Washington state; T. C. Bateson Construction Co., Dallas, Tex., low $3,529,541 to U. S. Engineer, Seattle.

3320 tons, bridge work, Montgomery and Philadelphia counties, Pennsylvania, bids to be opened by the State Highway & Bridge Authority, Harrisburg, June 12; also required are 948 tons of reinforcing steel.

2400 tons, maintenance hangar, Bunker Hill Air Force Base, Indiana, bids June 9, Corps of Engineers, Great Lakes, Ill.

2100 tons, transmission towers; bids to Bonneville Power Administration, Portland, Oreg., postponed from May 21 to May 28.

1670 tons, 19-story office building, Psaty & Furman Inc., Fifth Ave. and 46th St., New York, bids asked.

1350 tons, power plant, 1955 expansion, Virginia Electric & Power Co., Dunfries, Va., Stone & Webster Engineering Corp., Boston, contractor-engineer.

1195 tons, Burdines store, West Palm Beach, Fla., Frank J. Rooney, low on general contract.

1110 tons, Corps of Engineers, Pittsburgh, bids in.

600 tons, hangar, Atlantic Aviation Corp., Teterboro, N. J., bids asked.

540 tons, two state bridges, Windsor and Hartford, Conn.; bids June 1, Hartford.

515 tons, two maintenance hangars, Army Corps of Engineers, Pensacola, Fla., bids June 2.

507 tons, state thruway bridge, Onondaga county, New York, Dunbar Construction Co. and William O'Neil are low on general contract.

410 tons, plant addition, Aziano Building Co., Garden City, L. I., contractors, bids in.

400 tons, Public School No. 154, Queens, New York, bids closed May 19.

400 tons, extension, Eielson, Alaska, air field power plant; general award to Lytle & Green, S. Birch & Sons and Wyatt & Kipper, joint low $2,665,518.

300 tons, municipal viaduct, Monroe street, Baltimore, bids May 27.

200 tons, factory building, Nasland Dura-Leather Co., Philadelphia, bids closed May 18.

120 tons, Chandler power and pump plant, Yakima project; bids to Bureau of Reclamation, Kennewick, Wash., June 11.

## REINFORCING BARS . . .

### REINFORCING BARS PLACED

1200 tons, Big Delta army installation, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Peter Kiewit & Sons Co., Seattle, general contractor.

325 tons, bridge, Coosa river, Gadsden, Ala., to Alabama Steel Co., Birmingham, through C. F. Rule Construction Co., Nashville, Tenn.

300 tons, Seattle University men's dormitory, to Bethlehem Pacific Coast Steel Corp., Seattle; John H. Sellen Construction Co., Seattle, general contractor.

150 tons, underpass, City Park avenue, New Orleans, to Orleans Materials & Equipment Co., Inc., New Orleans; R. P. Farnsworth & Co., New Orleans, general contractor.

### REINFORCING BARS PENDING

5000 tons, Corps of Engineers, San Francisco, bids in.

1000 tons, Chandler power and pumping plant, Yakima project, Washington state; bids to Bureau of Reclamation, Kennewick, Wash., June 11; Spec. No. DC-3950.

948 tons, bridge work, Montgomery and Philadelphia counties, Pennsylvania, bids to be opened by State Highway & Bridge Authority, Harrisburg, June 12; also required are 3320 tons of structural steel and a substantial tonnage of steel beam piling.

395 tons, Garden State Parkway, contract No. 42, section 7, Monmouth county, New Jersey, bids June 4.

305 tons, bridges, Windsor and Hartford, Conn., bids June 1, Hartford.

230 tons, Garden State Parkway, contract No. 69, section 10, Ocean county, New Jersey, bids June 4.

130 tons, Corps of Engineers, Pittsburgh, bids May 25.

100 tons, municipal treatment plant, Walla Walla, Wash.; general contract to Fred J. Early Jr. Co., San Francisco, low $399,248.

## PLATES . . .

### PLATES PLACED

300 tons, welded plate pipe, Hanford Works project, to Consolidated Western Steel Corp., Seattle.

100 tons, water system supply pipe, Port Townsend, Wash.; installation contract to Cotton Engineering & Shipbuilding Co., Port Townsend, low $19,940; 3600 feet steel pipe previously purchased.

### PLATES PENDING

200 tons, tank, airport, Burlington, Vt.

120 tons, liner plate and penstocks, Chandler pump plant installation, Yakima project, Washington state; bids to Bureau of Reclamation, Kennewick, Wash., June 11.

Unstated, 250,000-gal. elevated steel tank; also prestressed concrete ground tank, storage reservoir, Great Falls, Mont., air base; bids to U. S. Engineer, Seattle, June 5.

## PIPE . . .

### CAST IRON PIPE PLACED

600 tons, 12 and 16-in., Lexington, Mass., to Warren Pipe Co., Everett, Mass.

535 tons, mostly 8-in., Swansea (Mass.) Water District, to Warren Pipe Co., Everett, Mass.

330 tons, 6 to 12-in., Weymouth, Mass., to Warren Pipe Co., Everett, Mass.

320 tons, 6 to 16-in., Plymouth, Mass., to Warren Pipe Co., Everett, Mass.

200 tons, 10 and 12-in., New Bedford, Mass., to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, 6 and 8-in., Milton, Mass., to United States Pipe & Foundry Co., Burlington, N. J.

### CAST IRON PIPE PENDING

300 tons, 12 and 6-in. system expansion; bids to Clackamas, Oreg., May 19.

250 tons, 12 to 6-in. and fittings; bids to King county, Wash., Water District No. 20, May 26.

## RAILS, CARS . . .

### LOCOMOTIVES PLACED

Minneapolis, St. Paul & Sault Ste. Marie, three 2-unit 3000-hp freight locomotives and three 1200-hp switching units, to Electro Motive Division, General Motors Corp., La Grange, Ill.

### RAILROAD CARS PLACED

New York, New Haven & Hartford, 11 sleeping cars and 4 lounge-buffet cars, to Pullman-Standard Car Mfg. Co., Chicago.

Northern Pacific, 20 stainless dome cars, comprising 10 coaches and 10 sleeping cars, to Budd Co., Philadelphia.

### RAILROAD CARS PENDING

Chicago, Rock Island & Pacific, 12 sleeping cars, pending.

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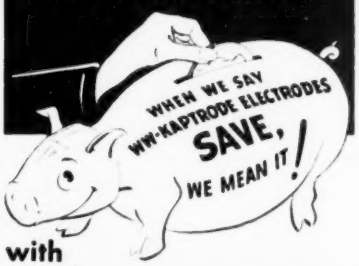


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*EVERY ITEM PRODUCED PRECISELY*

- SPLINE SHAFTS
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with the right equipment for every job


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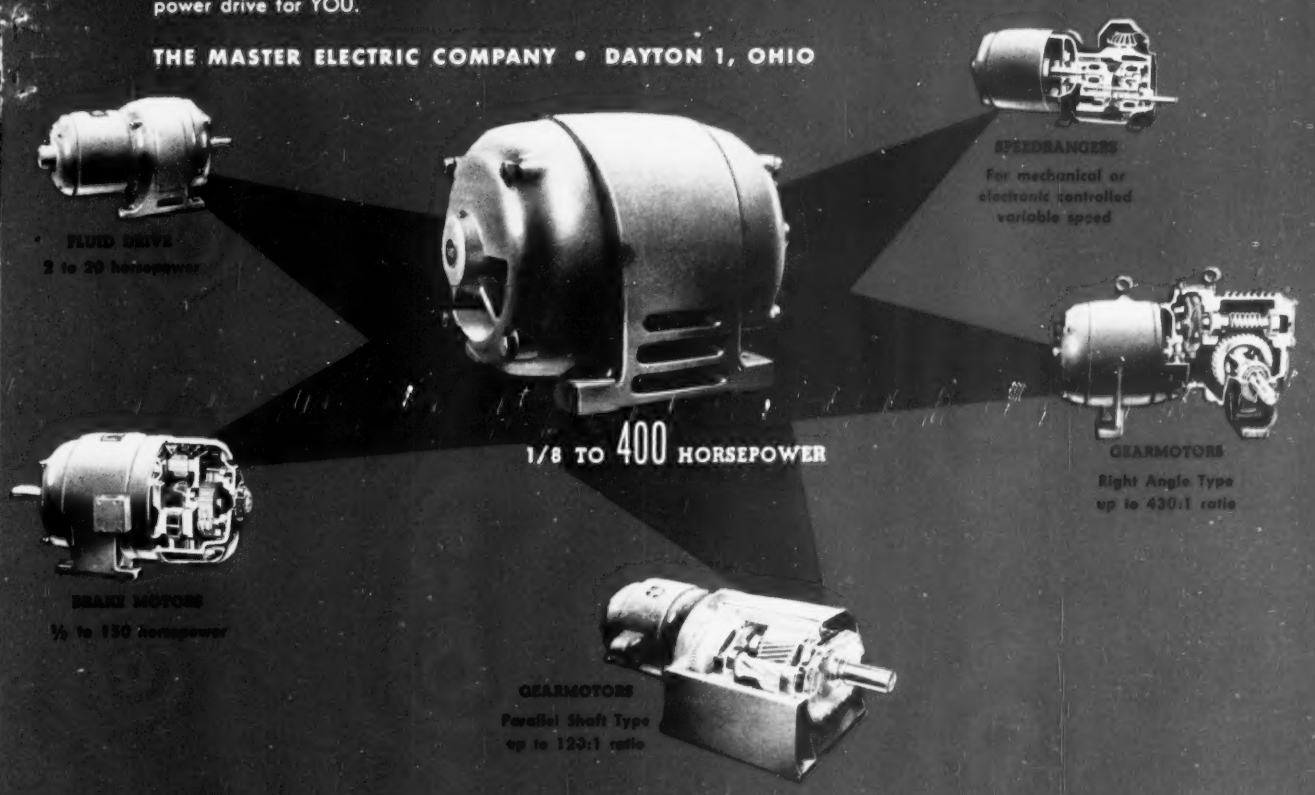
**THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO**

# give your brains a chance



# Speeds plate levelling, slows gear and roll wear... *with 84 TIMKEN® bearings*

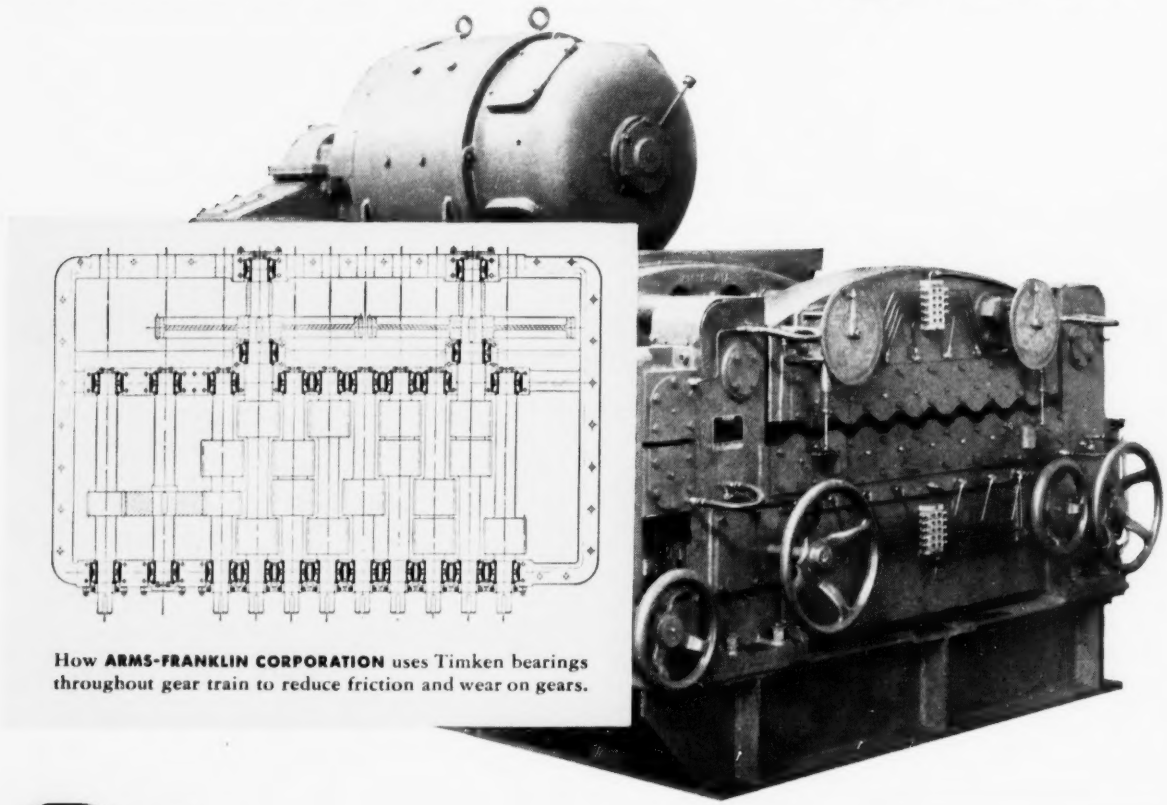
THIS Arms-Franklin Corporation leveller has power to spare for levelling ⅛-inch carbon and alloy plate. But a major design problem lay in delivering that power to the rolls, without leaving too much of it in bearings and gear train along the way.

One important part of the solution was mounting gears and rolls alike on Timken® bearings. This simplified design from the start, for Timken bearings' tapered rollers take both radial and thrust loads. Thus, special thrust bearings were eliminated. Bearing friction was held to a tight minimum, as a result of Timken bearings' true rolling motion and unbelievably smooth finish.

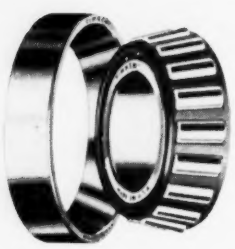
46 of the 84 Timken bearings in this leveller are used to hold the gears in precise alignment. Gears mesh accurately, smoothly, with less friction—and wear less as a result. And, since Timken bearings hold the rolls rigidly parallel, the plate passes through with little or no side slippage to cause roll wear.

With all this, line contact between rollers and races gives Timken bearings plenty of capacity for the buffeting shocks of tough levelling jobs. Whether you buy or build machines, specify Timken bearings. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

*This symbol on a product means its bearings are the best.*



How **ARMS-FRANKLIN CORPORATION** uses Timken bearings throughout gear train to reduce friction and wear on gears.



TIMKEN

TRADE-MARK REG. U.S. PAT. OFF.

*TAPERED ROLLER BEARINGS*

**MAGNIFYING GLASS INSPECTION OF EVERY ROLLER!**

Every one of the over one billion Timken bearing rollers produced every year is inspected with powerful magnifying glasses to detect surface flaws. It's just one example of how the Timken Company insures uniform high quality.

NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL AND THRUST — LOADS OR ANY COMBINATION